THE JOURNAL OF THE
TEXTILE INSTITUTE

ABSTRACTS

(The titles which are set in bold-face are intended as "scanning titles" for ease in classifying and filing. Where these are not substantially the authors' titles the exact titles are set in parentheses.)

1—FIBRES AND THEIR PRODUCTION

Spinnstoffkunde. Arnold Vatter. Stuttgart: Pœschel, 1951, 381 pages. In German. This book gives general information about textile fibres and their processing. It is divided into four parts: (1) fibres (plant, animal, mineral, chemical, synthetic), (2) spinning and yarns, (3) weaving and knitting, (4) finishing. There are two pages of cloth samples at the end of the book. **C—1.**

(B)—ANIMAL

The Silk Book. Silk and Rayon Users' Association. London: Silk and Rayon Users' Association, 1951, 107+vi pages. The aim of this book is to provide the layman with an elementary account of the production, properties, processing, and products of natural silk. It is illustrated with line-drawings, coloured plates, and fabric samples. **C—1B.**

Lumpy Wool (*Actinomyces dermatonomus*)**: Tranmission by Benzene Hexachloride Dips.** P. W. Tharold. *J. S. African Vet. Med. Assoc.*, 1950, **21**, 30-32 (through *Biol. Abstr.*, 1951, **F**, **25**, 24646). Concentrations of 0·005 per cent. γ-benzene hexachloride (BHC) prevented growth of *A. dermatonomus* in *in-vitro* tests. An area on the back of merino sheep with approximately 4 months' growth was infected with a serum culture and allowed to dry, then wetted with BHC and damped daily with water for 3 weeks. When not so damped, 0·005 per cent. BHC inhibited growth, whilst the damped was inhibited at 0·02 per cent. The disease could not be transmitted at the concentration used in dips. **W—1B.**

Sheep Maggot Fly Control: A Comparative Method for Testing Agents. L. C. Stones. *Bull. Entom. Res.*, 1951, **41**, 503-521. A "fly-sheep chamber", in conjunction with an "anti-adult" test and with a modified larval implantation technique, has been used to assess the protective properties of certain agents used against the sheep maggot fly, *Lucilia sericata*, Mg. A 0·5 per cent. DDT water suspension dip gave the most satisfactory protection against the adult fly; a 0·5 per cent. benzene emulsion dip was less satisfactory; spraying with DDT, and applying DDT as a dry powder, both gave inadequate protection. Benzene hexachloride and arsenic both acted as efficient larvicides. **W—1B.**

Birth-coats of Australian Merino Lambs. P. G. Schinkel. *Nature*, 1951, **168**, 698. Observations were commenced in 1944 on the genetic background of the differences in the birth-coats of South Australian (Bungaree) sheep. The results appear to uphold the hypothesis that the coarse birth-coats are the result of a single dominant gene. Some relations between the birth-coat grade and the character of the adult fleece are noted. **W—1B.**

Shetland Sheep. ("The Sheep that makes the Crofter's living.") R. Perry. *Farmer and Stockbreeder*, 1951, **65**, 3230, p. 49. The hardy Shetland sheep is a descendant of the Turbary and in some ways resembles the Soay sheep. The latter resemblance is strong with respect to colour as there is a tendency for the white Shetland to produce brown fleeced lambs whose colour, however, is dependent on the grazing ground. Although the fleece, which is removed by plucking, averages only 1½ lb. in weight, the fact that the sheep can survive half the year on a diet of mosses and seaweed makes it an important producer of wool for the island's knitted goods. **W—1B.**

Depilatory Activity of Sodium Sulphide and some Related Compounds. J. M. Gillespie. *Australian J. Sci. Res.*, 1951, **B**, 4, 187-210. The depilatory action of sodium sulphide on sheepskin has been investigated by measuring the pull required to remove wool from skin, the swelling of wool root shafts, and the mechanical strength of wool. The rate of action is augmented by increase in temperature, *pH* value, and concentration of sulphide in the solution employed up to 1·0M., but is reduced by increase to higher concentrations. The reciprocal action of the hydroxyl and hydrosulphide ions in digesting keratin is explained in terms of the ionization of sulphydryl groups. Solutions of 1·0M-sodium sulphide, partially oxidized with peroxide and adjusted to *pH* 12·8, completely loosen wool in 18 hours at 20° C. only if the oxidation-reduction potential is lower than −400 millivolts. Salts of various oxyacids of sulphur are less effective depilatories than is sodium sulphide, the activity diminishing with increase in the number of oxygen atoms in the anion and approximately with the heat of formation. Sodium selenide and sodium telluride possess depilatory activity equal to that of sodium sulphide. W—**1B.**

Moisture Changes in Sacked Raw Wool. E. Bertone. *Colorado Agric. Exper. Sta., Tech. Bull. No. 44*, 1951, 23 pp. The changes in weight of wool stored in bags, resulting from changes in conditions of storage, have been measured for two different kinds of wool. The wool had previously been stored for about a year at 83-89 per cent. R.H. at 40-45° F. Once the storage conditions had been altered, they were maintained at the new value for 20 weeks, the conditions being, in order, 50, 30 and 78 per cent. R.H. at 70° F. Comparison was made of the rate of change of wool stored in different positions, and a statistical analysis of the results is given. W—**1B.**

Baling Machine. Anon. *Wool Rec.*, 1951, **80**, 1397. A self-contained, electrically operated, mobile unit incorporating modern engineering techniques is described. A sack can be filled and removed in 6-7 minutes and 400-450 lb. of greasy wool can be packed into a Continental bale. W—**1B.**

(C)—VEGETABLE

Anglo-Egyptian Sudan: Progress Report of the Plant-Breeding Stations, Season 1948-49. R. R. Anson, R. L. Knight and M. F. Rose. *Emp. Cotton Growing Corporation, Progress Reports, 1948-49.* Separate reports are given of work carried out in 1948-49 at the Gezira, Shambat and Kadugli stations, dealing specially with meteorology, genetics and breeding, and pests and diseases. C—**1C.**

Arkot 2-1, the New Arkansas Cotton. *Rep. Ser. Ark. Agric. Exp. Sta.*, 1950, No. 19, p. 7 (through *Plant Breeding Abstr.*, 1951, **21**, No. 2, p. 377). Arkot 2-1 is a high yielding cotton which matures earlier than most commercial varieties in Arkansas, so that the crop can be harvested earlier and a better grade secured. Its ginning outturn is 34·5-36·5 per cent., and its staple length ranges from $1\frac{5}{32}$–$1\frac{1}{32}$ inches. The variety produces strong, relatively fine fibre of a satisfactory spinning quality. The bolls are easy to pick by hand or machine; the locks are firmly held by the bur, so that the variety is resistant to storms. C—**1C.**

Australia—Queensland; Regional Experimental Station, Biloela: Progress Report for the Season 1948-49. R. W. Peters. *Emp. Cotton Growing Corporation, Progress Reports for the Season 1948-49*, pp. 166-172. After a short general introduction, notes are given on meteorology, agricultural practices, irrigation investigations, soil moisture and nitrification studies, cotton breeding, strain trials, and entomology, followed by the programme for 1949-50. C—**1C.**

Bacterial Blight on Cotton in Madras. R. Balasubrahmanyan and A. Raghavan. *Indian Cotton Growing Rev.*, 1950, 4, pp. 118-23 (through *Plant Breeding Abstr.*, 1951, **21**, No. 2, p. 379). Cotton varieties have been studied for their reaction to the disease blackarm, in artificial inoculation tests based upon methods recommended by Knight and Clouston (*J. Textile Institute*, 1940, **31**, A55) and Simpson and Weindling (*J. Textile Institute*, 1947, **38**, A49); grading was based upon lesions of both stems and leaves. These tests have proved valuable in grading hybrid derivatives. Some evidence has been obtained that South Indian varieties of *Gossypium arboreum* are virtually immune to blackarm disease; natural resistance shown by Cambodia cotton in the form of pure linen selection Co.2 is due, it is suggested, to the accumulation of minor genes for increased resistance under the wetter climatic conditions of Indo-China. C—**1C.**

Below Soil Level. W. Lawrence Balls. *Emp. Cotton Growing Rev.*, 1951, **28**, April*. This is an account of observations made underground (in four root-observation pits) at Giza, by Cotton Research Board staff, in the nineteen thirties; planned for watching cotton root systems, they also provided much unexpected information on soils. Some suggestions are offered as causes of the things seen, but many facts are described which the author cannot fully explain—the descriptions, it is claimed, should stimulate further investigation. Seven years' records from one observation pit are given in detail under the headings: sunshine effect on the root; growth rates; water shortage in the subsoil; life and death of roots under waterlogging; calcite pseudomorphs of the root; red coloration on aeration; soil deterioration accelerated; and soil regeneration by washing. Lastly, there is a summary of results from all four pits. *(pp. 81-96). C—1C.

Cotton: Causes of Shedding of Buds, Flowers and Young Fruits. I. Manilov. *Rev. Sci. Res. Inst. Min. Agric. For.*, Sofia, 1950, **18**, No. 3, pp. 3-15 (through *Plant Breeding Abstr.*, 1951, **21**, No. 2, p. 378). Varietal differences in shedding of buds, flowers and young fruits were recorded. This tendency may be regarded as an indication of the drought resistance. C—1C.

Genetics Work: Report 1944-49. J. B. Hutchinson, H. Douwes and R. L. Cuany. *Emp. Cotton Growing Corporation—Progress Reports from Experiment Stations, Season 1948-49*, pp. 2-7. The authors report on the transfer of seed of the type-collection from Trinidad to the new Central Research Station's Sudan section, and on the recent acquisition of three long series of types from Central America. Details of genetic investigations on lint colour, and on resistance to blackarm and leaf curl, of cytogenetics work, and of lint development studies are given, together with a list of papers completed or in preparation. A programme of the work to be carried on in the Sudan in the Corporation's long-range research work is included in the report. C—1C.

Cotton. J. E. Adams. *Advanc. Agron.*, 1950, **2**, pp. 1-80 (through *Plant Breeding Abstr.*, 1951, **21**, No. 2, p. 376). The chief aspects of cotton production in the United States, including breeding, are surveyed by various authors. C—1C.

Cotton and Discontent in Uganda. *Economist*, 1951, **160**, May 12th, p. 1107. This is an account of the conditions of cotton growing, ginning, and marketing in Uganda, which have led to widespread discontent in the colony. C—1C.

Cotton Experiment Station, Barberton, South Africa: Progress Report for Season 1948-1949. Empire Cotton Growing Corporation. *E.C.G.C. Progress Reports, Season 1948-49*, pp. 8-32. After news of staff and visitors, and a note on the handing-over of the station to the South African Government, suggested lines of future work are enumerated and there are comments on the recent opportunity for growers to obtain a legal close-season for cotton. An account of the Plant Breeding section is followed by reports on the Plant Pathology and the Entomological and Physiological sections. There are fifteen references. C—1C.

Cotton from Bikini. M. S. Brown. *J. Hered.*, 1950, **41**, pp. 115-21 (through *Plant Breeding Abstr.*, 1951, **21**, No. 1, p. 136). Seeds of the commercial cotton *Acala 911* were exposed at the time of the explosion of the first atomic bomb detonated at Bikini, and an analysis was made of the chromosomal changes in plants grown from the exposed seed. With few exceptions, the plants grown from the exposed seed were as vigorous as plants grown from unexposed seed, and morphologically indistinguishable from them. C—1C.

Cotton Planting and Picking Dates. International Cotton Advisory Committee. *Internat. Cotton Bull.*, 1951, **19**, January-February, pp. 28-29. A table lists the planting and picking dates, the staple length, and the names, of the cottons produced in most of the cotton growing countries of the world. C—1C.

The Cotton Worm Problem. Ibrahim Bishara. *Egypt. Cotton Gaz.*, 1951, **12**, January, pp. 43-56. Methods for dealing with this blight are described. In Egypt, hand collection of egg-masses is the accustomed method and is enforced by legislation. The author has been investigating the spraying and dusting of various insecticides on the cotton plant. A mixture of DDT (which checks the cotton worm) and Gammexane (which checks Aphis) was found to give the best results. This mixture also kills pink boll worm. Dusting proved to be more

effective than spraying, and for large areas, a heliocopter dusted the leaves very evenly at great speed. It is suggested that the systematic collection of egg-masses should continue and that chemical control should be resorted to only as need arises. C—1C.

Cotton: Developments in the World Situation during the First Half of the 1950-51 Season. Dudley Windel. *Egypt. Cotton Gaz.*, 1951, 12, January, pp. 17-24. Figures are given for the acreage planted to cotton in 1950 in different parts of the world, the estimated 1950-1951 world production, the world stocks on July 31, 1950, the consumption of commercial cotton in the world during 1949-1950, and the estimated consumption for 1950-1951. C—1C.

Pollination: The Effects of Time and Method on Seed Set in American Upland Cotton. H. D. Loden, C. F. Lewis and T. R. Richmond. *Agron. J.*, 1950, 42, pp. 560-64 (through *Plant Breeding Abstr.*, 1950, 20, No. 4, p. 660, and 1951, 21, No. 2, p. 378). A detailed report is given of investigations into the use of various methods of artificial pollination of American Upland cotton. It was found that the application of foreign pollen to stigmas of non-emasculated flowers, before normal recaptivity, gave a significant increase in the mean number of seeds per boll as compared with methods where pollen is applied at the time of anthesis; this increase is thought to be due to the stimulation of one or more substances aiding fertilization. C—1C.

Experiment Stations, and the Production and Distribution of Seed Cotton for Sowing, in Argentina. *Bol. Produc. Fomento Agric.*, 1950, 2, No. 8, pp. 2-13 (through *Plant Breeding Abstr.*, 1951, 21, No. 1, p. 136). In 1948, for the first time, part of the area under cotton in Argentina was sown with varieties produced by local breeding stations, and it is expected that their cultivation will gradually spread. This will require a well organized system of seed production, and the systems employed in other countries, such as the U.S.A., Brazil and Peru, are examined. There follows a description of the system instituted in Argentina by decree in 1948. C—1C.

Cotton: Extension of the Improved Varieties in Member-States of Central India and Rajputana. Kubersingh. *Indian Cotton Growing Rev.*, 1950, 4, pp. 106-117 (through *Plant Breeding Abstr.*, 1951, 21, No. 2, p. 378). An account is given of work connected with the distribution of improved cottons in Central India and Rajputana, with reference to the varied nature of the territories involved, condition of the cultivators, the organization and facilities available, and the improved varieties and the problems encountered in their distribution. C—1C.

Cotton Growing: Future Problems of Hyderabad State. V. K. Bederker. *India Cotton Growing Rev.*, 1950, 4, pp. 79-88 (through *Plant Breeding Abstr.*, 1951, 21, No.2, p. 376). This is an account of the suggested means of overcoming the problem of the low yield of seed cotton and lint per acre in Hyderabad by selective breeding. Improved varieties can be further improved in staple length, ginning outturn, boll size and wilt resistance, by hybridization. Fundamental research should also be carried out on the lodging-habit of Gaorani 6E–3 and its inheritance, the photoperiodic response in *fusarium indicum* and the genetics of cottons of this form. C—1C.

Khandesh Cotton Breeding Work Done During 1921 to 1948: Graphical Representation. T. R. Khadilkar. *Poona Agric. Coll. Mag.*, 1950, 41, pp. 54-56 (through *Plant Breeding Abstr.*, 1951, 21, No. 1, p. 137). A graphical indication of the trend in economic characters of the cotton strains developed in Khandesh is provided. Notes are also given on the morphological characters of the strains concerned, which comprise the local cotton, Banilla, Jarila, N.R.6 and 197-3. C—1C.

Heritable Relationships of Brown Lints in Cotton. S. G. Brain. *Agron. J.*, 1950, 42, pp. 188-91 (through *Plant Breeding Abstr.*, 1951, 21, No. 1, p. 137). A study was made of five phenotypically distinct varieties of Upland cotton (*Gossypium hirsutum*) with brown lint, and one brown linted variety of *G. barbadense*. Additional investigations are to be carried out before symbols are proposed for the genes determining brown lint colour. C—1C.

Improved Cotton Plants—and Planters. Anon. *Soviet News*, 1950, No. 2,456, p. 7 (through *Plant Breeding Abstr.*, 1951, 21, No. 2, p. 376). In Uzbekistan, a new variety of cotton, from which the leaves fall when the crop is mature, has

been produced by selection. This is an advantage for machine harvesting. Other characters include increased weight of the boll and higher fibre content. Sparse lateral growth allows an increase in the number of plants per acre. C—1C.

Mechanical Harvesting of Cotton in Queensland. R. W. Peters. *Emp. Cotton Growing Rev.*, 1951, **28**, April, pp. 114-120. The author gives the history of mechanical cotton harvesters, brief notes on the five general types, and a detailed account of the mechanics of the picker type, which is the one now in commercial use in Queensland. The author summarizes the results obtained with mechanical harvesters in Queensland, and there is a table of data on mechanical harvesting there. Notes are given on the treatment of machine-harvested cotton, and on the cultural and plant-breeding changes required for mechanical harvesting. There is a diagram, with notes, on the method of working of the picker type harvester. C—1C.

Mechanical Harvesting of Cotton in Queensland. R. W. Peters. *Qd. Agric. J.*, 1950, **71**, pp. 197-205 (through *Plant Breeding Abstr.*, 1951, **21**, No. 2, p.378). The introduction of the mechanical cotton harvester has promoted changes in the criteria for breeding and selection. The ideal plant is now one under five feet in height, having an open growth habit, with a minimum of vegetative growth at the base of the plant and with a symmetrical arrangement of bolls. Progress has already been made in improving commercially-grown varieties. C—1C.

Natural Crossing in Cotton in Western Punjab. IV. Agents of Natural Crossing. A. H. Khan and M. Afzal. *Agron. J.*, 1950, **42**, pp. 236-38 (through *Plant Breeding Abstr.*, 1951, **21**, No. 1, p. 137). The chief agents in bringing about natural cross-pollination of cotton at Lyallpur have been found to be insects, chiefly *Apis dorsata, Anthophora confusa* and *Elis thoracia;* wind pollination does not occur. C—1C.

A New Class on the Cotton Farms. *Economist*, July 14th, 1951, **161**, No. 5629, pp. 101-2. The abundant cotton harvest last season has made this the Sudan's most prosperous year, but it has given rise to certain social problems. A new class of relatively rich tenant farmers is being created—particularly in the Gezira Cotton Board's estates south of Khartoum—without any adequate provision being made to bolster its new living standards against bad years. The author fears that if a cotton slump comes after a long interval, the tenants will have become so accustomed to their higher standards of living that adjustment to harder conditions will be difficult. Further, whereas at present limitation of the efficiency of mechanization by the smallness of the 40-acre plots is accepted, in order to preserve the social pattern of the area, there is a danger that in bad times this principle might have to be abandoned, and that collectivization of the farms would become difficult to avoid. C—1C.

Cotton: New Announcement by Originators of Deltapine Varieties. *Crops and Soils*, 1950, **3**, No.2, p. 25 (through *Plant Breeding Abstr.*, 1951, **21**, No. 2, p. 376). The new variety, known as Fox, is earlier in fruiting than Deltapine and $\frac{1}{32}$ inch shorter in staple. Though it lacks the very high lint percentage of Deltapine, it has given high yields of seed cotton, and it has a thicker fibre than most varieties of similar fibre length. C—1C.

Cotton Pollen: A New Method for Artificial Germination. S. Hutukaiti. *Proc. Imp. Acad. Japan*, 1942, **18**, pp. 97-99 (through *Jap. J. Bot.*, 1943, **12**, Abstr. 140, and *Plant Breeding Abstr.*, 1951, **21**, No. 1, p. 137). A thin layer of sucrose agar medium was dried by an electric fan, and then distilled water was added and the excess wiped off with blotting paper. Pollen grains were placed over this layer, the upper surface of the medium being inverted over water to prevent drying. This method gave a germination percentage of 55-68. C—1C.

Cotton Wilt Caused by Verticillium dahliae. O. A. Drummond. *Lilloa Rev. Bot., Tucumán*, 1949, **21**, pp. 54-56 (through *Rev. Appl. Mycol.*, 1951, **30**, No. 3, p. 158). The author describes his studies—which have been in progress since 1940—of cotton wilt, one of the most important diseases of the crop in Minas Gerais, Brazil. Experiments are still proceeding, on lines suggested by the Department of Genetics of the College of Agriculture, with a view to the development of a fixed character of resistance to *Verticillium dahliae*. C—1C.

The Nuba Mountains Cotton Crop: Some Factors Affecting Yield. M. F. Rose. *Emp. Cotton Growing Rev.*, 1951, **28**, April, pp. 103-113. This is an account of

the cotton growing situation in the Nuba Mountains area. In a general introduction the author describes the topography of the area, the history of cotton-growing there, its present-day status, and its future prospects. Factors affecting cotton yield are discussed under the headings: date of planting, spacing, plants per hill, and seed rate and thinning date. There is a summary of the discussion and recommendations, and nine references are given. C—1C.

Nyasaland: Cotton Experiment Station, Season 1948-49. Empire Cotton Growing Corporation. *E.C.G.C. Progress Reports for the Season 1948-49*, pp. 98-107. After a general introduction on the whole area, a progress report is given of the work at Domira Bay Station during 1948-49, with a summary of the main conclusions, and a note on the 1949-50 programme. C—1C.

Prospects for World Raw Cotton Production and Consumption in 1950-51—a Preliminary Survey. Dudley Windel. *Emp. Cotton Growing Rev.*, 1951, **28**, No. 1, pp. 49-55. The author comments on the world prospects for the production and consumption of raw cotton in 1950-51, on the basis of the latest statistical information. Figures are given of the annual world supply and distribution of commercial cotton from the 1938-39 season to 1950-51, of world cotton stocks (in individual countries) on July 31st, 1950, and of world production in 1950-51. Prospects for the cotton harvests of the various principal cotton-growing countries are summarized, figures for world consumption of raw cotton in the 1949-50 and 1950-51 seasons are given, and world cotton prices are discussed. C—1C.

Southern Rhodesia: Cotton Research Station, Gatooma. Progress Report for the Season 1948-49. A. H. McKinstry and R. W. James. *Emp. Cotton Growing Corporation; Progress Reports for the Season 1948-49*, pp. 108-117. This is a report with the headings meteorology, agriculture, cotton plant development and crop yield, cotton breeding, and cotton pests. There is a note on the 1949-50 programme. C—1C.

Egyptian Cotton: The Statistical Position at 31st December, 1950. R. Dabbous. *Egypt. Cotton Gaz.*, 1951, **12**, January, pp. 93-156. Detailed statistics are given of production, stocks, consumption and exports of Egyptian cotton, some statistics embracing figures for several years back. Quotations of the Alexandra Cotton Futures Exchange and spot quotations on the Minet-El-Bassal market are listed from September 1949 to January 1951. C—1C.

Cotton Grown Under Constant Soil Moistures. Part II. Dry Weight, Yield and Economy of Water. P. S. Sreenivasan. *Proc. Indian Acad. Sci.*, 1949, **30**, pp. 249-58 (through *Plant Breeding Abstr.*, 1951, **21**, No. 2, p. 379). Differential response to soil moisture was shown by an improved strain of Asiatic cotton, and the variety MU_4 of American cotton. C—1C.

Tanganyika Territory: Progress Reports for the Season 1948-49. Lake Province. J. E. Peat. **Eastern Province.** A. G. Bebbington. *Emp. Cotton Growing Corporation, Progress Reports 1948-49*, pp. 80-92 and 93-99. The Lake Province report contains a summary of the main experimental results; a general account of the work for the 1948-49 season under the headings husbandry, cotton breeding, and pests and diseases; and notes on the 1949-50 programme. The short report for the Eastern Province includes notes on weather, agriculture, cotton breeding, insect pests, insecticide trials, and the 1949-50 programme. C—1C.

Uganda: Report of the Senior Botanist. J. D. Jameson. **Cotton Experiment Station, Kawanda: B.P. 52 Breeding Work, 1948-9.** H. L. Manning. *Emp. Cotton Growing Corporation, Progress Reports, Season 1948-49*, pp. 33-44 and 44-51. The Senior Botanist's account of studies of the cotton crop in relation to climate and disease, the resistance of cotton to blackarm under rainfall, and the response of the cotton plant to damage, is followed by a report on breeding work carried out in 1948-49 on the Kawanda Cotton Experiment Station, the programme for 1949-50 at Numalonge and Kawanda, and the transfer of the B.P. 52 breeding work to Numalonge. C—1C.

West Indies: Cotton Experiment Stations; Antigua, Montserrat and St. Vincent: Progress Reports for the Season 1948-9. Empire Cotton Growing Corporation. *E.C.G.C. Progress Reports for the Season 1948-49*, pp. 138-165. After an introductory note on the commercial crop and the experiment stations, three individual reports are given. The Antigua station report deals with meteorology, agriculture, land use, cotton strains, and pests and diseases, with a note on the

1949-50 season's programme at the end. The subjects of the Montserrat station report are meteorology, cotton breeding work, and experiments with nitrogenous and phosphate fertilizers, while the report for Camden Park station, St. Vincent, concerns weather conditions and pests, the breeding programme, and manurial trials. These two stations also give details of their 1949-50 programme. C—**1C.**

Jute and Its Substitutes: Comparative Study. Paul Batault. *l'Industrie Text.*, 1948, 65, pp. 331-333. In French. Fibres of two plants from Equatorial Africa—*urena lobata* and *triumphetta cordifolia* ("Punga")—were found to have properties very similar to those of jute fibres. C—**1C.**

Rainfall: Confidence Limits of Expected Monthly —. H. L. Manning. *Empire Cotton Growing Corporation: Research Memoirs*, 1951, No. 9, 8 pages. Frequency distributions of monthly rainfall, which were demonstrably skew, may be suitably transformed so that on the new scale they approximate closely to theoretical normal distributions. As a result, precise fiducial or confidence limits—shown in fact to fit the data satisfactorily—may be estimated. Practical applications include the more accurate representation of rainfall patterns, valuable guides to the vital question of optimum time of planting, and better estimates of the range of mean monthly rainfall. Application of these limits to some special cases is discussed in some detail. There are nine references. C—**1C.**

Blackarm Disease: Genetic Control *(Xanthomonas malvacearum)* **in Cotton.** R. L. Knight. Pamphlet, [?1951], 9 pages. This is a reprint of a paper given at the fifth International Congress of Comparative Pathology, Istanbul, 13-19 May, 1949. It summarizes the results of work by the author, who is Senior Economic Geneticist, Empire Cotton Growing Corporation and Sudan Government. C—**1C.**

Cotton Fibre: Observations on Microbiological Deterioration During the Period of Boll Opening in 1949. P. B. Marsh, L. R. Guthrie, K. Bollenbacher and D. C. Harrell. *Plant Dis. Reporter*, 1950, **34**, pp. 165-75 (through *Plant Breeding Abstr.*, 1951, **21**, No. 1, p. 138). Microbiological fibre deterioration at the time of boll opening was found to be mainly due to *Diplodia* and *Colletotrichum Gossypii*, both of which were associated with a general type of symptom complex, designated fungus tight lock. Attempts to observe varietal differences in susceptibility to the production of tight lock resulted in the general conclusion that, while such differences very probably do exist, environmentally associated differences in the amount of leaf cover round the bolls often overshadow or mask varietal differences. C—**1C.**

Cotton: Resistance to Diseases. S. N. Moskovec. *Agrobiologija* (*Agrobiology*), 1950, No. 3, pp. 148-51 (through *Plant Breeding Abstr.*, 1951, **21**, No. 1, p. 139). A report is given of comparative trials, of resistance of *Gossypium hirsutum* varieties to gummosis and *Verticillium* wilt, at the Azerbaidžan Scientific Research Institute of Agriculture. C—**1C.**

Cotton: Natural Crossing in Western Punjab. III. Methods of Checking Natural Crossing. M. Afzal and A. H. Kahn. *Agron. J.*, 1950, **42**, pp. 202-205 (through *Plant Breeding Abstr.*, 1951, **21**, No. 1, p. 138). Three types of barrier were tested at Lyallpur as a means of preventing natural crossing under ordinary field conditions: allied varieties, open space, and sorghum. The growing of allied varieties side by side provided the most effective barrier in the case of both local and American cottons. C—**1C.**

Cotton: Test Quality of Four Generations Removed from Breeder's Foundation Seed. V. P. Moore and J. B. Dick. *Miss. Fm Res.*, 1950, **13**, No. 5, pp. 1, 2 (through *Plant Breeding Abstr.*, 1951, **21**, No., p. 138). An account is given of a study of the deterioration in quality of successive generations of two varieties of cotton. Even with very careful growing, handling and ginning, the spinning quality declined. C—**1C.**

Upland Cotton: Variability in the Properties of Lint. J. M. Green. *Agron. J.*, 1950, **42**, pp. 338-41 (through *Plant Breeding Abstr.*, 1951, **21**, No. 1, p. 138). Phenotypic variation in lint characters was determined in about four hundred strains of *Gossypium hirsutum* in the cotton collection maintained at the Mississippi Agricultural Experiment Station. Variation in lint characters shown by five local varieties grown commercially was also analysed and compared with the total variation found in the collection. Effective selection for lint per cent. has raised the control varieties well above the mean. Although measurements

were based on an unreplicated planting, the total range observed for each of the fibre characters studied indicated the presence of an important amount of genetic variance. C—1C.

Bimlipatam and Mesta Fibres: Composition. (*Hibiscus cannabinus*). D. B. Das, M. K. Mitra, and J. F. Wareham. *J. Textile Institute*, 1951, **42**, No. 4, pp. T181-184. The results of an investigation of the chemical composition of *Hibiscus cannabinus* fibre are reported. Figures are tabulated for the fat, ash, lignin, α-cellulose, xylan, polyuronide, and hexosan contents of each of three parts (root, middle, and tip) of the plant. There are twelve references. C—1C.

Flax Retting in Austria. *Text. Ind. and Fibres*, 1951, **12**, No. 9, 319. Austria's largest retting plant, at Friestadt, had just been completed and will go into production in October. It is capable of producing 4,800 tons of flax a year. The area under flax which will supply this plant with raw material is to be increased considerably next year. L—1C.

Irish Re-scutched Tow: Prices. *Linen Trade Circ.*, 1951, **37**, September 15, 2. The prices to be paid to growers by the Flax Spinners' Association Ltd., for re-scutched tow from 1951 dam-retted flax have just been announced as:—Grade I, £131 per ton; Grade II, £116 per ton; Grade III, £94 per ton. L—1C.

Flax Pulling: New Machine. *Vlasberichten*, 1951, June. States that a new machine will be on the market next season which will eliminate the hand-pulling of headlands round flax fields. L—1C.

(D)—Artificial

Bobina Perlon Fibre: Its Properties and Economic Significance. Walter Miehlich. *Melliand Textilber.*, 1950, **31**, No. 8, pp. 521-523. In German. The properties of Bobina Perlon fibre (manufactured by Kunstseidenfabrik Bobingen) are listed. Its suitability as an additive to other fibres is discussed. The most suitable conditions (including atmospheric conditions) for processing are described. C—1D.

Cutting Staple Rayon. Claude Halley. *L'industrie text.*, 1948, **65**, pp. 339-340. In French. The principles of a staple rayon cutting machine are described. C—1D.

Perlon Fibre and Yarn: Large-Scale Production. Hermann Klare. *Faserforsch. u. Textiltech.*, 1951, **2**, No. 1, pp. 1-9. In German. The processes and working conditions necessary for the production of Perlon yarn are described. C—1D.

Synthetic Protein Fibres: Production Survey of Post-War Developments. Hans Günther Fröhlich. *Melliand Textilber.*, 1950, **31**, No. 10, pp. 663-666. In German. In a literature survey covering twenty-five papers the author discusses the processes for producing and stabilizing casein, Ardil and zein fibres. C—1D.

Synthetic Fibres. ("More Specific Properties Needed in New Synthetic Fibers.") Milton Harris. *Chem. Engng News*, 1951, **29**, No. 7, pp. 545-547. The need in the development of new synthetic fibres is stated to be the production of fibres which have certain desirable properties in terms of any given end-use. The use of chemicals in finishing is briefly outlined. C—1D.

Synthetic Fibers. Anon. *Chem. Engng News*, 1951, **29**, No. 26, pp. 2552-2557. This article reviews in a general way the more recent developments in synthetic fibres. C—1D.

Rayon and Synthetic Fibres. Cotton and Rayon Merchants Association. Manchester: Cotton and Rayon Merchants Association, 1951, 155 pages. This is the third edition of a book based upon a series of lectures given in 1943-44. In addition to the chapters on viscose rayons, acetate rayons, cuprammonium rayons, rayon staple, rayon weaving and fabric development, the dyeing and finishing of rayon woven fabrics, and the printing of rayon woven fabrics, it now contains a chapter on nylon. C—1D.

Patents

Artificial Protein Filaments and Yarns. Courtaulds Ltd., L. E. Hodges, C. L. Knight, W. Walker and R. L. Wormell. B.P.645,390: Appl. 15/6/1948; Filing 14/6/1949; Publ. 1/11/1950 [Addition to B.P.549,642*]. Artificial protein filaments, etc., freshly spun from solutions of milk or vegetable casein, are rendered resistant to boiling water or hot dilute acids, by a hardening treatment in a bath containing formaldehyde (5-15 g./l.) and one or more metallic salts other than sodium chloride (for example, sodium or aluminium sulphate),

at *pH* 3 to 8, followed by treatment in an insolubilizing bath containing 500-800 g./l. of sodium bisulphate and 5-15 g./l. of formaldehyde. (*See *J. Textile Institute*, 1943, 34, A116.) C.

Rayon Thread Advancing and Winding Reels. Courtaulds Ltd. and T. S. Mayner. B.P.645,767: Appl. and filing 15/4/1948; Publ. 8/11/1950; U.S.A. appl. 16/4/1947. The claim is for a composite thread advancing and winding reel, for the continuous processing of rayon, comprising at least three separate reel members; these members are constructed from sets of bars, and mounted on axes that are offset and askew to each other and arranged so that during each revolution of the composite reel the thread will be advanced by all but one of the reel members. Selective mechanism is provided to prevent or cause the rotation of the eccentric members on which all but one of the reel members are mounted, so that the composite reel may be converted from a thread-advancing to a thread-storage cylindrical reel. C.

Viscose Coagulation Bath containing Lubricant. Courtaulds Ltd. and John Wharton. B.P.646,963: Appl. 9/2/1948; Filing 8/2/1949; Publ. 29/11/1950. To prevent the formation of hard deposits on thread guides, godets or thread-advancing reels in the production of viscose rayon, the coagulation bath is made up with a cation-active organic compound (for example, cetyl pyridinium bromide) and a lubricating agent consisting of a free fatty alcohol or acid having at least ten carbon atoms (for example, lauryl alcohol) or a condensation product of such an alcohol or acid with ethylene oxide or a polyamine. Both agents may be obtained as a mixture by condensing sperm oil with an aliphatic polyamine and, if desired, alkylating the product. C.

Prestretching Cellulose Derivative Yarns to Increase Tenacity. Celanese Corporation of America, Thomas Barnard Frearson, and Edgar Alfred Goodall. U.S.P.2,554,564: Appl. 9/6/1948, in Great Britain 24/6/1947; Publ. 29/5/1951. C.

Yarn Advancing Reel. E. I. du Pont de Nemours & Co., Inc., and Alvin L. Ewing. U.S.P.2,554,670: Appl. and filing 10/1/1946; Publ. 29/5/1951. C.

Wet Spinning Process [For Acrylonitrile Polymers]. E. I. du Pont de Nemours & Co. Inc., Joseph Gordon Calton, and Quentin John O'Brien. U.S.P. 2,555,300: Appl. 13/2/1947; Publ. 5/6/1951. C.

2—CONVERSION OF FIBRES INTO FINISHED YARNS

(A)—Preparatory Processes

Cleaning, Spinning, Controlling Problems Discussed by Georgia Men. Georgia Textile Operating Executives. *Text. World*, 1951, **101**, No. 6, pp. 106-111, 200-220 (17 pages). This is a summarized, question-and-answer report on a recent meeting of the Textile Operating Executives of Georgia. Topics discussed were: high-draft spinning; under-frame cleaners; automatic builder motions; metallized and chrome-plate top rolls; ball-bearing top rolls, nylon saddles and oilless cap bars; pneumatic roll pickers; antifriction spindles; converting to large warp bobbins; reducing "wild yarn" on spoolers; and the control of sliver, roving and yarn weights. Two tables, concerned with twenty-three Georgia mills, summarize the cleaning schedules for opening and picking, and the methods of controlling weights (and variation permitted). C—**2A.**

The Crêpy Circular Combing Machine. Ch. Berthier. *l'Industrie text.*, 1948, 65, pp. 305-307. In French. Details are given of the principle and operation of the Crêpy circular combing machine. C—**2A.**

Fiber Blending is Best Done Mechanically. W. F. Leineweber, Jnr. *Text. World*, 1951, **101**, No. 6, pp. 139, 141, 222, 224. In this digest of a paper given at the spring meeting, 1951, of the American Society of Mechanical Engineers, the author strongly recommends the use of automatic blending lines for fibres. These thoroughly mix various opened fibres by the simultaneous addition of small, proportionalized increments of automatically weighed stock. C—**2A.**

Carding. ("How Much Work Does Each Flat Do?") E. H. Helliwell. *Text. World*, 1951, **101**, No. 5, p. 145. An experiment on a cotton card is described which indicates that a flat is loaded with fibre when it reaches the position of the tenth flat, but continues to pick up trash until it leaves the bend. A partial summary of the test is given in a table. C—**2A.**

Nep Formation During Rayon Staple Sliver Production. G. Nitschke. *Faserforsch. u. Textiltech.*, 1951, **2**, No. 1, pp. 9-19. In German. It is shown that the development of neps during the production of rayon staple sliver, may be due not only to purely mechanical factors such as maladjustment or overloading of the carding machine, but also to such factors as atmospheric conditions, or properties of the fibres themselves such as moisture content, brittleness, fineness, or structure (cross-sectional shape, for instance). Other factors are the proportion of excessively short fibres present, the efficiency of the opening process, and the mixture of fibres from different sources or of different types. There are twenty-four references. C—**2A.**

Pneumatic Handling of Textile Materials. J. Wagner. *l'Industrie text.*, 1948, **65**, pp. 301-304. In French. Various systems of pneumatic transport of textile materials, in particular raw cotton, are classified and described, with diagrams and photographs. C—**2A.**

Whitin Rolls Precision Manufactured with Most Modern Machine Tools. Whitin Machine Works. *Whitin Rev.*, 1950, **17**, No. 6, pp. 9-16. The processes involved in the manufacture of Whitin rollers for roving and spinning frames are shown in a series of photographs. C—**2A.**

Nylon Staple (3 Denier, 1½ Inch): Processing on Cotton Spinning Machinery. F. Millard. *J. Textile Institute*, 1951, **42**, No. 4, pp. P125-31. Detailed technical information is given on the opening, carding, drawing, and (ring) spinning procedures for processing nylon staple fibre on the cotton system. C—**2A.**

Pin Drafter: Operation and Maintenance Data. *Text. Industr.*, 1951, **115**, 9, 123-125. The article describes the Pin Drafter used in the American system of worsted yarn manufacture. It discusses the standard of sliver irregularity produced, and the cleaning, maintenance and lubricating schedules carried out by three mills using this type of gill box. W—**2A.**

Woollen Yarns: Prevention of Faults. Choice and Setting of Rubber Motions. Anon. *Wool Rec.*, 1951, **80**, 1155-1156. The use of single and tandem rubbers with ring doffer condensers for different types of wool is discussed. The speed and length of stroke of the rubbers and the amount of drafting to be allowed is considered. It is recommended that the single rubber normally used in tape condensers should press only lightly on the tape: in this system a longer stroke can be made. Examples are given of suitable leather widths. W—**2A.**

Wool: Continuous Scouring and Detarring by Solvents. ("Le lavage continu et le dégoudronnage de la laine par solvants.") J. Dumont. *l'Industrie Text.*, 1951, **68**, 353-355. Developments in the Hoffman method of scouring by solvents are described. Suint and other impurities are extracted by intensive mechanical action under jets of solvent, which is then removed from the wool by high-powered centrifuge, rinsing with water being unnecessary. W—**2A.**

Polyglycol Ethers and Wool Scouring with Leonil O. ("Ueber den Nachweis von Polyglykoläthern und die Wollwäsche mit Leonil O.") H. Haakh, D. von Candié, and W. Möbus. *Melliand Textilber.*, 1951, **32**, 699-701. The preparation of a tannin from resorcin and glucose is described and it is shown that this tannin may be used for the qualitative and quantitative determination of Leonils O and FFO by the formation of a precipitate. All polyglycol ethers of the Leonil type which were tested gave the same reaction, which could be applied analytically. It is further shown that these ethers may be quantitatively shaken out of aqueous solution with, *e.g.*, butyl alcohol. Other similarly formed tannins gave the tannin precipitate with Leonils, and the tannin from resorcin and glucose gave precipitates with a series of other high-molecular substances which are presumably of value for analysis. The method is shown of using the resorcin-glucose tannin for testing scouring liquors and wool grease for Leonil O content. W—**2A.**

Animal Fibres: Cleaning: Use of High Frequency Currents. ("Par application de courants haute fréquence on accélère le nettoyage des fibres animales.") R. Vidal. *l'Industrie Text.*, 1951, **68**, 356-357. A short account is given of separating vegetable matter from animal fibres by metallization (*e.g.* with iron) and treatment with a high frequency current, followed by subjection to a magnetic field. Drying and heat treatment by high-frequency currents are used for the degradation of the vegetable material. W—**2A.**

Woollen Carding: Opening Arrangements on Woollen Cards. *Platt's Bull.*, 1951, **7**, 207-210. The development of the forepart of the carding engine is described, including the reduction in diameter of the breast cylinder and the change in the clothing used from the flexible wire to the rigid variety. Some carding systems which have been tried and found unsatisfactory are mentioned and a standard four-takers-in forepart, which is recommended for the longer stapled wools, is shown diagramatically. W—**2A.**

The Nolten Process. *Linen Trade Circ.*, 1951, **37**, September 1, 17. Describes briefly the hackling and spinning, carried out in Cairo, of a quantity of degummed flax. The results are stated to have been satisfactory. L—**2A.**

Flax Tow Cards: Management and Maintenance. S. A. G. Caldwell. *Text. Mfr.* 1951, **77**, October, 497-499. The author discusses methods of blending fibres for carding and points out the functions of carding. He deals with the use of the tin cylinder and fibre recuperator to reduce waste, and stresses that the formation of a good card sliver requires a uniform rate of feed and a uniform distribution of fibre on the feed sheet; he compares roller coverings, and gives optimum figures for pin angle and roller speeds. L—**2A.**

(B)—Spinning and Doubling

Balmes High-Draft System. R. Thiebaut. *l'Industrie text.*, 1948, **65**, pp. 333-336. In French. Details of the system, and data for Indian cottons and rayon staple fibre, are presented. C—**2B.**

Calculating Disc for the Yarn Doubling Process. Anon. *Melliand Textilber.*, 1950, **31**, No. 8, pp. 526-527. In German. The article describes the construction and application of a calculating disc for establishing the count of a doubled yarn obtained from any number of single yarns. C—**2B.**

Travellers: Influence on Thread Breakage. W. E. Baltz. *Melliand Textilber.*, 1950, **31**, No. 10, pp. 666-668. In German. *Melliand Textilber.* (*English Edition*), 1951, **32**, No. 1 E, pp. 5-6. In English. The author discusses two hypotheses put forward by Lebedev; these relate to the influence of the traveller on thread breakage, and suggest (1) that abnormal frictional effects cause stoppage in a short but finite time, and (2) that tilting of the traveller on the ring causes a virtually instantaneous stoppage. The author of the present article does not appear to be convinced of the validity of the arguments for the hypotheses. He suggests that a slow-motion film study of the movement of the traveller might answer the question of whether or not sudden stoppages do occur. A comparative study by Lebedev of normal and highly polished rings on the same ring frame, showed that breakage frequency with the polished rings was 62·5 per cent. of breakage frequency with the normal rings; it is therefore concluded that the cause of breakages should not be sought exclusively in the rings and travellers. C—**2B.**

Modified Flyer Spinning Frame for High-Twist Spinning of Yarn (Metric Counts: 4 to 11). J. Bennefoy. *l'Industrie text.*, 1948, **65**, pp. 337-338. In French. C—**2B.**

Cops of Constant Weight on the Doubling Frame: Possibilities of Achieving. Fritz Emerich. *Melliand Textilber.*, 1950, **31**, No. 9, pp. 596-598. In German. An expression is developed for the construction of an indexing wheel which is such that cops of constant weight—other conditions being equal—can be obtained after a constant running time. C—**2B.**

Slubs in Cotton Yarn: Their Cause and Prevention. Anton Beck. *Melliand Textilber.*, 1950, **31**, No. 8, pp. 524-526. In German. *Melliand Textilber.* (*English Edition*), 1950, **31**, No. 2 E, pp. 35-37. In English. Defects in machine design and their correction, proper maintenance of machinery, and hints on operational methods, are discussed in relation to slubs in yarn originating during the drawing and spinning operations. C—**2B.**

Drafting: Defective Drafting Arising from Imperfections in Front Rollers of Mules and Ring Frames. J. Gregory and A. Tyson. *J. Textile Institute*, 1951, **42**, No. 4, pp. T147-167. After describing a typical yarn defect due to irregular drafting, the authors show that the primary mechanical cause of this fault is the movement of the roller nip. The causes of nip movement are discussed and analysed in terms of (i) roller eccentricity, (ii) varying compressibility of the roller covering material, (iii)) interaction between arbor and boss giving rise to varying

compression of the roller covering under changing load, and (iv) some miscellaneous causes which do not readily fit this classification. In actual operation these causes are not likely to occur separately and a vector method of compounding the first three causes above is explained. Experiments which were carried out to assess the relative importance of the various causes of roller nip movement are described, and finally the practical implications of the results are discussed. C—**2B.**

Ends Down—An Everyday Problem for Management. James Osborne. *Text. Age*, 1951, **15**, No. 6, pp. 10-15. The author describes a campaign that was carried out to reduce the number of ends down during cotton spinning. Various causes of this trouble are discussed to indicate how the incidence of ends down may be lessened. C—**2B.**

Hilfsbuch für Baumwollspinner und Zwirner. Hubert Kastner. Stuttgart: Konradin-Verlag Robert Kohlhammer, 1950, 112 pages. In German. This handbook for cotton spinners and doublers is concerned essentially with spinning calculations. C—**2B.**

Yarn Production by the Pot Spinning System. John J. McCann. *Text. Age*, 1951, **15**, No. 4, pp. 42-46. This illustrated article describes the McCann method of centrifugal spinning which requires no bobbins, spindle, ring, traveller, cap, flyer, tape, or tension pulleys. One can pot spin any size of package, any count of yarn, at any speed, from any material. C—**2B.**

Wool Preparation and Spinning. Anon. *Text. Merc.*, 1951, **125**, 672, 675. Some new machinery being made in Germany for these processes is briefly described. Included are a fully automatic carding set suitable for the production of all types of yarn; two models of a ring-spinning frame with a new drawing roller and spinning head claimed to offer many advantages; a self-acting mule; and a range of openers and "drousettes" for the thorough preparation of wastes. W—**2B.**

Worsted Ring-spinning Machine. ("Die Kammgarn-Ringspinnmaschine.") O. Kieser. *Text.-Praxis*, 1951, **6**, 645-647. A short account is given of some developments in Continental ring-spinning machinery in this century, some individual makes of frames being described. Sectional diagrams are included. W—**2B.**

Double-cone Clutch for Use on the Differential Mule. ("Die Wirkungsweise der Doppelkegel-Reibungskuppling am Differentialselfaktor.") G. Liebig. *Melliand Textilber.*, 1951, **32**, 675-676. A double-cone clutch is described which satisfies the requirements of a differential mule with three spindle speeds by giving a reliable but flexible transmission of power. W—**2B.**

Worsted Spinning: Thread Breakage and Spinning Limit. (II). ("Über die Fadenbruchzahl und Spinngrenze in der Kammgarnspinnerei.") W. H. Schneider. *Textil-Rdsch.*, 1951, **6**, 391-402. The calibration and use of the Uster evenness-measuring machine and the method of calculating the unevenness factor to serve as a standard in testing yarns are described. The statistics of a test on 58s Merino wool are discussed, attention being given to the influence on thread breakage of length of stretch, individual fibre strength and the nature of the material at the thinnest cross-sections, and to calculating the probability of coincidence of weak fibres with small yarn cross-section. A test on a 300-spindle ring frame is described in detail, and observed are compared with calculated results. W—**2B.**

Worsted Yarn Piecenings. P. P. Townend and J. T. Sleightholme. *Text. Rec.*, 1951, **69**, 823, 101-2. Experiments have been carried out on the diameter, length, twist per unit length, and strength of piecenings in yarns over a wide range of counts. Comparative tables and graphs are given of results showing that the diameter of the piecening over its whole length is about 50 per cent. greater than that of a similar, but not piecened, yarn. This thickening extends for about 3 inches irrespective of the count and the twist is greater than in the normal yarn and remains so for at least five inches beyond the piecening. Results of strength tests were insufficient for any conclusion to be drawn. W—**2B.**

The F.L.C.B. Ring Spinning Frame. *Alphomega* (Messrs. Fairbairn, Lawson, Combe Barbour Ltd.), 1951, No. 2; *Text. Mfr*, 1951, **77**, October, 500-506. The historical development of this machine is outlined. The main points in its design are: (1) automatic lubricating system; (2) regular washing of the rings with warm water for wet spinning flax; (3) a maximum speed of 9,000 r.p.m. is possible, but

in practice 6,000 r.p.m. is usual; (4) a bobbin of plastic, reinforced with nylon, this type being suitable for drying the yarn on the bobbin; (5) all metal parts subject to wetting are treated against corrosion. Variation in tension due to variation in bobbin diameter and length of balloon is discussed, and a series of tables giving comparative figures of production and efficiency against flyer frames are given. **L—2B.**

(D)—YARNS AND CORDS

Copying a Fancy Twist Effect Thread. Heinrich Müller. *Melliand Textilber.*, 1950, **31**, No. 8, pp. 527-529. In German. The author shows how a fancy twist effect thread can be perfectly copied, even without such technical aids as an analytical balance. **C—2D.**

PATENTS

Drafting-Device Pressure-Rollers. Fonderie de Precision. B.P.645,251: Appl. and filing 10/10/1945; Publ. 25/10/1950; French appl. 1/10/1941. A pressure roller for a drafting device is formed of a hollow cylinder in which one or more weighting rods or tubes are placed, being retained there by end plugs. The inserted pieces are sand-blasted, or coated with felt, the coefficient of friction being such that they are driven in rotation by the cylinder. C.

Yarn Gassing Frame Guiding Disc and Cleaner. Fine Spinners and Doublers Ltd., George Freeman and Donald Hutchinson. B.P.646,612: Appl. 30/6/1948; Filing 29/6/1949; Publ. 22/11/1950. The usual porcelain guide that directs the gassed yarn to its package is replaced by a vertical disc, one face of which is covered with cloth or other suitable material, or has a projecting flange, that serves to clean the yarn of burnt fibre and dust. C.

[Drafting] Apparatus for Detecting and Correcting Departures from Standard in the Thickness or Diameter of Longitudinally Travelling Textile Slivers. G. F. Raper. B.P.656,135 of 15/8/1951. A device is described which can be fitted to an ordinary textile drafting machine for the purpose of varying the draft to compensate for the irregularities of the ingoing sliver. W.

Lubricating Textile Fibres. Textile Oils Ltd., C. W. A. Mundy and R. H. H. Morley. B.P.654,930 of 4/7/1951. Mineral-based fibre lubricants which give enhanced scourability by alkalis can be prepared as follows: mineral hydrocarbon oil, 20-80 per cent.; scouring assistant, 5-50 per cent.; oleine acids, 10-65 per cent. The scouring assistant may consist of: (i) esters containing at least one but not more than two hydroxyl groups prepared from aliphatic polyhydric alcohols, *e.g.* ethylene glycol, glycerol, and a fatty acid or hydroxy fatty acid containing at least 8 carbon atoms and not more than 3 double bonds, or wool fat acids, or liquid rosin acids; (ii) esters prepared from the above alcohols and a triglyceride oil such as coconut oil, olive oil, groundnut oil or other fatty oils; (iii) monohydroxy fatty alcohols containing at least 8 carbon atoms, secondary monohydric alcohols with the hydroxyl group in the β or γ positions, or sterol alcohols, *e.g.* cholesterol or wool fat alcohols. The scouring assistant may consist of one, or mixtures of all of these three types of compounds. The oleine acids consist of long chain fatty acids containing more than 8 carbon atoms, and also the acids occurring in the wool grease or wax or its distillates. The flash point of the acids by standard Cleveland open-cup test exceeds 340° F. W.

Cut-off Stop Motion for Textile [Twister] Machinery. Thomas E. Batey. U.S.P.2,555,219: Appl. and filing 1/4/1948; Publ. 29/5/1951. C.

[Sealed-In] Lubricated Spinning Spindle. Selectronics Inc., and Eugene F. Monnia. U.S.P.2,555,358: Appl. and filing 27/5/1946; Publ. 5/6/1951. C.

Spinning and Twisting Spindle. Jan Mandouchitch. U.S.P.2,555,652: Appl. and filing 3/6/1949, in Switzerland 30/5/1948; Publ. 5/6/1951. C.

Pendulous Bobbin Holder. Reconstruction Finance Corporation, and Fausto G. De Santis. U.S.P.2,556,684: Appl. and filing 26/4/1949; Publ. 12/6/1951. C.

Drawing, Twisting, Doubling, and Spinning Machinery. Courtaulds Ltd., William Hardaker, Edgar Beaumont, and Horace B. Merriman. U.S.P.2,556,919: Appl. and filing 7/9/1949, in Great Britain 14/9/1948; Publ. 12/6/1951. C.

Cradle for Long Draft Spinning. Avondale Mills, and Richard R. Pope. U.S.P. 2,557,036: Appl. and filing 10/5/1947; Publ. 12/6/1951. C.

3—CONVERSION OF YARNS INTO FABRICS

(A)—PREPARATORY PROCESSES

Device for Measuring Warp-Thread Tension. P. A. Kolesnikov. *Faserforsch. u. Textiltech.*, 1951, **2**, No. 2, pp. 58-60. In German. An electrical method for determining tension in a warp thread, the thread is made to travel over a pulley suspended on a manganin wire. Changes in electrical resistance of the wire, brought about by changes in warp-thread tension, are measured by means of a Wheatstone-bridge arrangement. C—3A.

High-Speed Dresser Reels. Whitin Machine Works. *Whitin Rev.*, 1950, **17**, No. 6, pp. 29-35. Technical instructions are given for the efficient operation of high-speed beaming machines for woollen and worsted yarns. Gear charts for the traverse and reel drives are included. C—3A.

Pirn Winding Crêpe and High Twist Combination Yarns. H. Lasch. *Text. Mfr*, 1951, **77**, April, pp. 168-169, 171. Details are given of some of the advantages achieved by employing special methods of overend-winding off big supply packages. C—3A.

Winding. ("Theory and Practical Evaluation of a New Precision Cone Winder for Rayon.") Lothar Rehm. *Faserforsch. u. Textiltech.*, 1951, **2**, No. 1, pp. 28-35; No. 2, pp. 61-78; No. 3, pp. 104-108. In German. The author enumerates the features essential to a modern cone-winding machine, briefly reviews existing methods of tension control, and makes a lengthy and fundamental examination of various aspects of the winding process with a view to determining the factors involved in the final structure of the package—such as yarn tension variation at different points of the machine. A modified system is then described; it is based on a derived relationship between angular velocity of the spindle, changing diameter of package (due both to its conical shape and to its growth), and the speed of the yarn. The system incorporates (1) a device for maintaining constant yarn length between the yarn brake and the cone itself, thus tending to eliminate the periodic changes in tension inherent in cone winding; (2) an automatically controlled variable-speed disc friction drive for the spindle; and (3) a device for measuring the length of yarn wound on to the package. C—3A.

Thread Guides. A. Geiger. *Melliand Textilber.*, 1950, **31**, No. 10, pp. 671-673. In German. *Melliand Textilber. (English Edition)*, 1950, **31**, No. 2 E, pp. 48-49. In English. After a short review of the wide range of materials used for thread-guide manufacture, the author discusses the essential requirements of such guides. An ideal guide would be chemically inert, a good electrical conductor, easily worked and shaped, and inexpensive. Degussit, a sintered aluminium oxide, is discussed, and information is given about its production, chemical and physical properties, constructional peculiarities, and economic application. C—3A.

Automatic Cop Winder. W. Schlafhorst and Co. *Text. Wkly*, 1951, **48**, July 6th, pp. 24, 26. Details are given of the "Schlafhorst" automatic solid cop winder. C—3A.

Lubricating Oils: Use in Textile Industry. Shell Chemicals Ltd. *Hosiery Trade J.*, 1951, **58**, (694), 58. "Rayconus F" is a viscose rayon oil which facilitates loop formation during knitting and also prevents undue needle wear. It combines a high order of efficiency in lubrication with low viscosity and freedom from discoloration by sulphur compounds. "Conus L" is a woollen carding oil which is suitable for processing blends containing alkali-sensitive fibres. H—3A.

Flax Spinning. Part II. Machinery and Equipment. Chap. VIII. Combing. A. V. Pringle. *Text. Quarterly*, 1951, **1**, No. 3, 262-289. The evolution of mechanical combers is traced, and the construction of a number of rectilinear combs in present day use is outlined. The general features of Prince-Smith and Stells, Schlumberger, and Alsacienne machines are described. Numerous illustrations are given, and there is a table giving comparison figures for different types of rectilinear combs. L—3A.

(B)—SIZING

Homogenization Helps Slashing and Weaving. James H. Kennedy. *Text. World*, 1951, **101**, No. 5, pp. 130-31, 133, 135, 137, 218. A recent comparison of the effect of boiled and homogenized size on coarse, medium and fine cotton yarns is described. It shows that homogenized size will improve fibre lay and give

less rigid fibre bonding, and that the yarns retain more elongation and have improved single-end strength. A number of photographs are given showing cross-sections of sized yarn, the appearance of yarn unsized, sized with boiled size, and sized with homogenized size, and the appearance of sized yarn at a break. Mention is made of a "shedding" machine, used to simulate the effect of weaving on the sized warp. C—3B.

Rational Sizing. Bernard Metais. *l'Industrie text.*, 1948, **65**, pp. 341-342. In French. Size formulations are given for ensuring that the correct amount of size is applied to yarn. C—3B.

Sizing. J. Bader. *Melliand Textilber.*, 1950, **31**, No. 9, pp. 630-634. In German. A survey of present methods of warp and hank sizing shows that the two major factors affecting weaving properties are the sizing agent, and the drying. It does not appear that there is much to choose between cylinder drying and air drying. New drying methods are discussed, and it is suggested that improved size film characteristics may be possible with infra-red drying. Linseed-oil sizing is mentioned, with particular reference to hank sizing. C—3B.

Linseed Oil Size. H. M. Ulrich. *Deutscher Färberkalender*, 1951, **55**, pp. 173-184. In German. C—3B.

Jute and Linen Weaving. Chap II. Specialised Warp Preparing. T. Woodhouse and T. Milne. Re-written by W. Haggan. *Text. Quarterly*, 1951, **1**, No. 3, 244-261. Part I deals with: (1) Hank sizing. Three methods, one of them automatic, are discussed, and size mixtures are given. (2) Coning on Stubbs' Q.T. winder. The machine is described in detail. (3) The Hattersley combined sectional warping and beaming machine. Diagrams are included. L—3B.

(C)—WEAVING

Weaving: Correct Warp Tension. H. Hollstein. *Melliand Textilber.*, 1950, **31**, No. 10, pp. 674-675. In German. The author puts forward suggestions, based on wide experience, for calculating the correct tension of warp threads. The tension on the individual end is normally of the order of $3\frac{1}{2}$ to 7 per cent. of its tensile strength. C—3C.

The Dobby—an Important Auxiliary in the Weaving Mill. Quirin Buchele. *Melliand Textilber.*, 1950, **31**, No. 8, pp. 529-531. In German. The author points out the special suitability of the dobby for fabrics with a large number of shafts and a long ornamental design. Installation and operation are described in detail. One section of the paper deals with faults and their correction. The punching of dobby cards from a previously prepared peg plan is described. C—3C.

Insertion of Weft in the Sulzer Shuttleless Loom. Fernard Roumieux. *l'Industrie text.*, 1948, **65**, pp. 315-318. In French. The mechanism of the operation is described in detail. C—3C.

Jacquardgewebe Band IV. E. Staengle. Stuttgart: Kouradin-Verlag, Robert Kohlhammer, 1950, xl+pp. 437-719. In German. The fourth part of this comprehensive work on jacquard weaving has as its subject weaving with several warp and weft systems. C—3C.

Picker: Manufacture and Testing of Substitutes for Raw Hide. Claus Starke. *Faserforsch. u. Textiltech.*, 1951, **2**, No. 1, pp. 38-44. In German. No suitable substitute has yet been found for raw-hide in the manufacture of pickers, particularly in the case of heavy and high-speed looms. Some of the lighter types of overpick looms, however, can be equipped with pickers of textile-fibre/resin composition. The requirements of such substitutes are discussed. It is possible that with further development of synthetic materials such as the polyamides, substitutes suitable for heavier and high-speed looms will be found. A description is given of the apparatus and method of testing. C—3C.

Rationalization of Processes in the Weaving Mill. M. Vielajus and M. F. Leroy. *l'Industrie text.*, 1948, **65**, pp. 321-324. In French. C—3C.

Weaving: The Relationship Between Shed-Opening and Sley-Movement. Josef Schneider. *Melliand Textilber.*, 1950, **31**, No. 9, pp. 598-604. In German. The maximum size of the shuttle, and hence the maximum number of picks per shuttle, is determined both by the extent of opening of the shed, and by the sley movement. The problem is discussed at length with reference to jacquard looms. C—3C.

Weaving in of Selvedge Lettering on a Standard Loom with Shafts. Werner Milde. *Melliand Textilber.*, 1950, **31**, No. 8, pp. 536-537. In German. Figured selvedges and selvedges with lettering are produced mostly on jacquard looms. This article shows how to produce lettering on an ordinary loom, by means of shafts. C—**3C.**

Weaving Rayon Staple. E. O. Hesse. *Melliand Textilber.*, 1950, **31**, No. 10, pp. 680-681. In German. It is suggested that staple rayon can be treated in much the same way as cotton, during weaving, provided that attention is paid to the physical differences between the two yarns. C—**3C.**

Weaving Wire into Fabrics. A. Johnson. *Text. Mfr*, 1951, **77**, pp. 181-182. Methods of weaving wire into fabrics for strengthening and heating purposes are outlined. Far greater difficulties are encountered when wire is used as weft than when it is woven as warp. C—**3C.**

Loom Drives. ("Brown Boveri Loom Drives Installed in a Modern Spanish Weaving Shed.") F. Grolimund. *Brown Boveri Rev.*, 1947, **34**, No. 12, pp. 262-264. A brief illustrated description is given of the new weaving sheds that have been constructed for a large Spanish textile concern. The looms are individually driven by Brown Boveri loom motors. C—**3C.**

Looms: Conversion for Duck Weaving. Anon. *Text. Age*, 1951, **15**, No. 2, pp. 28-31. Three parts of a loom which are important for duck weaving (the let-off, harness, and take-up motions), and the changes which must be made to Draper looms to convert them for duck weaving are described. The characteristics of Crompton and Knowles duck looms, and the capacity of Draper looms to weave duck, are given in two tables. C—**3C.**

Jacquard Engineering. C. T. Dracup. *J. Textile Institute*, 1951, **42**, No. 3, pp. P97-103. After discussing briefly two types of pattern cards for controlling jacquard mechanisms, the author deals with the development of the jacquard machine from the early single lift models to the modern double lift machines. Mention is made of more specialised machines, for example, a jacquard for the production of uncut moquette, a special four lift jacquard for Wilton carpets, and the damask jacquard. Finally, jacquard harnesses are briefly dealt with. A discussion on this paper is reported (*ibid.*, pp. P101-103). C—**3C.**

Woven Fabric Design: Suggestions for Novelty Effects. Abd. El. Latif Maamoun Bayoumi. *Text. Rec.*, 1951, **69**, July, pp. 84-86. The production of a variety of fancy fabrics by the employment of leno and net leno figuring is explained. There is a diagram showing a method of shedding whereby selected warp ends with different tensions cross each other on successive picks, and several illustrations are given of fancy weaves and their various constructions. C—**3C.**

Weaving: Prevention of Faults. ("Solving the fault problem in woven fabric production.") Anon. *Text. Rec.*, 1951, **69**, 823, 110-111. Apart from defects due to faulty yarns and to worn loom parts, the most important cause of sub-standard cloth is uneven warp tension. In this connection improvements in the warping creel and a device for maintaining the correct tension on re-winding on to the weaver's beam are described. Work in progress on overcoming weft tension variation and faults due to finishing processes is briefly mentioned. W—**3C.**

(D)—KNITTING

"Milastic" Circular Knitting Frame. Plutte, Koecke & Co. *Melliand Textilber.*, 1950, **31**, No. 10, p. 682. In German. The principal features of the Maratti Milastic circular knitting frame are briefly indicated. C—**3D.**

Caps: Production on Flat Knitting Frames. Wilhelm Busch. *Melliand Textilber.*, 1950, **31**, No. 9, pp. 612-615. In German. The author discusses the production of caps (for children and adults) on flat-knitting machines. The knitting of the individual parts and the making-up of the goods are described in detail with the aid of sketches. C—**3D.**

Warp Knitting on Latch Needle Machines: III. Laying-in. J. B. Lancashire. *Text. Rec.*, 1951, **69**, July, pp. 95-96. C—**3D.**

Sixty-gauge Stockings: Knitting. *Hosiery Underwear Rev.*, 1951, **34**, (10), 146-7, 158. Manufacture of sheer 60 gauge 15 denier stockings by avoiding over-coursing is described. The relation of coursing to denier, courses per inch

standards, advantages of undercoursing and the possible relation of twisted nylon yarn to the knitting of sheer 60 gauge stockings are discussed. H—**3D.**

Dacron: Knitting. C. B. Faries. *Hosiery Underwear Rev.*, 1951, **34**, (10), 148-150, 160-162. Discusses the problems involved in the knitting of Dacron and the necessity of knitting with a looser stitch. Comparison is made with the knitting of silk. Tension, yarn lubrication, knitting with two ends of plied yarn, knitting with blends, and types of reinforcing are also discussed. H—**3D.**

Angoraplatina Yarn. Grafberger Co. Bayreuth. *Hosiery Times*, 1951, **24**, (269), 24. Angoraplatina is a hand knitting yarn consisting of a mixture of Angora wool and Perlon. It is stronger, lighter and softer than existing yarns and is non-felting. It has been successfully dyed in 25 different shades. H—**3D.**

Knitwear Production: Review. W. Davis. *Hosiery Times*, 1951, **24**, (269), 23-24. Reviews Jacquard machines of the flat type. H—**3D.**

Linkless-toe Hosiery. *Hosiery Trade J.*, 1951, **58**, (693), 26-7. Discusses the formation of the linkless-toe, the advantages gained from the method and the patents and literature available on the subject. Illustrations and diagrams. H—**3D.**

Linkless-toe Hosiery. *Text. World*, 1951, **101**, (8), 119-21. Describes the construction of the linkless-toe, including knitting and machine-changing details on Reading and Kalio machines. H—**3D.**

(F)—Subsequent Processes

Costume: History. Miss A. M. Buck. *J. Textile Institute*, 1951, **42**, No. 5, pp. P213-215. This is a summary of a lecture on the historical development of English costume. C—**3F.**

(G)—Fabrics

Colour and Weave Effects in Double-Weave Fabrics. Herbert Petzold. *Melliand Textilber.*, 1950, **31**, No. 10, p. 679. In German. C—**3G.**

Construction and Manufacture of Jacquard Figured Moquettes. J. Cowburn. *Text. Mfr*, 1951, **77**, April, pp. 83-85, 197. Details are given of the construction and manufacture of jacquard figured double-piece, double-shuttle cut-pile moquettes. The top piece is designed as a mirror image of the bottom piece. C—**3G.**

Marking Shuttle-Change on a Jacquard Pattern. Franz Teichel. *Melliand Textilber.*, 1950, **31**, No. 10, pp. 675-678. In German. A system is presented which prevents misunderstandings, arising from the method of making up the point-paper, about shuttle change. This is particularly useful when the order of picking is irregular. C—**3G.**

Pattern Arrangements for Silk and Rayon Clothing Fabrics. Julius Wendlik. *Melliand Textilber.*, 1950, **31**, No. 9, pp. 607-609. In German. C—**3G.**

Pattern Calculations for Circular Knitting Machines: Theory: Jacquard Machine with Pattern Wheels. Lorenz Friedl. *Melliand Textilber.*, 1950, **31**, No. 8, pp. 544-546. In German. The author analyses a coloured design made on a circular jacquard knitting machine with pattern wheels. He works out the coloured point-paper design, and the working design according to the Asch method. C—**3G.**

Tubular Weaves: Determination of Minimum Number of Ends. G. Wolf. *Faserforsch. u. Textiltech.*, 1951, **2**, No. 1, pp. 36-37. In German. Expressions are derived for calculating the minimum number of ends necessary to produce a tubular weave from a given pattern. C—**3G.**

Tyre-Cord Manufactured from Cotton, Rayon, and Synthetic Fibres, and Its Properties. Walter Frenzel. *Faserforsch. u. Textiltech.*, 1951, **2**, No. 1, pp. 22-27. In German. The author describes the demands which tyre fabrics and tyre cord have to meet, and the structure of cotton tyre cord. Increasing speed of the heavier vehicles meant that a better heat conductor than cotton was required for the tyre cord, and it was replaced by viscose rayon. The poor affinity of the rayon for rubber was improved by preliminary impregnation with latex. The article also discusses the later use of polyamide fibres such as nylon and Perlon, and glass fibres. C—**3G.**

Woven Tricot Fabric. Josef Schmachtel. *Melliand Textilber.*, 1950, **31**, No. 9, pp. 605-606. In German. Production of tricot weaves on the loom is discussed. Point-paper diagrams are included. C—**3G.**

Non-Woven Fabric: A New Type. John F. Ryan. *Amer. Dyest. Rep.*, 1951, **40**, No. 8, pp. P262-P264. A new type of non-woven fabric, containing no bonding agent and having no inter-fibre fusion, is described. The fabric is called Webril-R and its properties are markedly different from adhesively bonded fabrics. It is said to combine a large degree of extensibility and conformability with high porosity and low density, and to be particularly suitable as a base for coating, saturating and impregnating. The material can be dyed, starched, slit, *etc.* in the customary manner or with minor machine adjustments. C—**3G.**

Textile Design: XI. Crêpe Designs. Anon. *Text. Rec.*, 1951, **69**, July, pp. 89-90. This article deals with woollen and worsted crêpe designs; it gives detailed notes, plans of weaving, and illustrations of the finished appearance of several worsted crêpes. C—**3G.**

Synthetic Blends: Employment: Underwear. *Hosiery Underwear Rev.*, 1951, **34**, (9), 109, 111, 116. Discusses the use of new blends for underwear and emphasises the need for light-weight and loose-fitting cloths. H—**3G.**

PATENTS

Circular-Knitting Machine Elastic Selvedge Mechanism. Hemphill Co. B.P. 645,063: Appl. and filing 6/8/1947; Publ. 25/10/1950; U.S.A. appl. 4/3/1940. An independent-needle circular knitting-machine is provided with means for feeding an elastic yarn; means for feeding a non-elastic yarn at a separate point; means for separating needles so that spaced needles only will take the elastic yarn, and means for drawing that yarn into independent knitted stitches; means for raising needles to a yarn-taking but not to a latch-clearing position prior to taking the non-elastic yarn; and supplemental means, movable to and from active position under pattern control, for raising spaced needles only to clear latches at this non-elastic yarn feed, so that certain needles will knit and others will tuck. Details are shown in fourteen sheets of machine drawings. C.

Automatic Pirn Winder Change-Mechanism. W. H. Frost. B.P.645,274: Appl. 8/11/1947; Filing 6/11/1948; Publ. 25/10/1950. The bobbin-change mechanism of an automatic pirn-winder is actuated by a lever (A), supported upon a cam driven by a weft-measuring pulley. The movement of the lever brings into operation a spring-suspended weight; this is mounted on one end of a rod, suspended from one arm of a lever the other arm of which is provided with a lateral projection (B). This projection is normally retained by the spring at the bottom of a slot (C) in an arm suspended from one arm of lever A; the arrangement is such that when the weight falls, it momentarily extends the spring beyond its normal extension and moves projection B to the top of slot C; during this movement the weight strikes one arm of a member which forms part of the bobbin-change mechanism, thereby bringing this into operation. Recovery of the spring results in the immediate withdrawal of lever A. C.

Knitting-Machine Yarn Take-Up Device. Hemphill Co. B.P.645,388: Appl. and filing 13/5/1948; Publ. 1/11/1950; U.S.A. appl. 23/5/1947. The claim is for a yarn take-up device for a knitting machine, that includes means, for applying a force tending to swing the take-up arm, which provide a source of energy that is greatest when the arm is down and decreases progressively as the arm rises. The means include a resilient cantilever member, one end of which is in variable leverage relationship with the arm, but does not vary in length during the swing of the arm, so that variations in the applied force of the cantilever member are accompanied by simultaneous inverse variations in its effective force upon the take-up arm. C.

Sectionalized Yarn Beam for Tape Frames. Callaway Mills Co. and H. G. C. Fairweather. B.P.645,591: Appl. and filing 15/10/1948; Publ. 1/11/1950. The invention relates to a section beam by means of which a warp can be wound from section to section without stopping the tape frame. Each section comprises a spool, one end disc of which is slotted from the periphery to the hub, whilst the other disc has a yarn-engaging device near its periphery. C.

Gripper Shuttle Loom. Zbrojovka Brno. B.P.646,047: Appl. and filing 5/12/1947; Publ. 15/11/1950; Czech appl. 18/12/1946. [Addition to B.P. 643,741*.] The earlier form of stationary weft supply loom, in which the gripper shuttle was carried by a flexible band along a closed path through the warp shed, is modified in that the band and its driving gear are mounted on the loom

batten so that they participate in its oscillating motion. (*See *J. Textile Institute*, 1951, 42, A379.) C.

Seamless Terry Fabric Hosiery: Production. E. W. Clarke. B.P.646,283: Appl. and filing 31/10/1945; Publ. 22/11/1950; U.S.A. appl. 14/7/1945. The invention relates to a seamless stocking in which leg and instep portions have patterns in terry loops, and also to modifications to a circular knitting machine for producing the effects. There are twenty-four claims, and mechanical details are shown in seven sheets of drawings. C.

Circular Loom Shuttle. Saint Frères. B.P.646,465: Appl. and filing 12/1/1948; Publ. 22/11/1950; French appl. 17/1/1947 and 22/12/1947. For weaving on a circular loom with solid cops of weft that are unwound from the outside, the arcuate shuttle is lined with stiff bristles (for example, of nylon) or brushes. The claims relate to shuttles that will carry up to 1 kilogram or more of yarn. C.

Loom Under-pick Motion. Rudolf Hrdina. B.P.646,709: Appl. and filing 8/7/1947; Publ. 29/11/1950; Czech appl. 9/7/1946 [Addition to B.P.624,373*]. The picking shaft of the prior invention carries cams for the operation of the shedding motion and extends through the picking stick casing. (*See *J. Textile Institute*, 1950, 41, A250.) C.

Warp Knitting Machine Let-off Motion. British Celanese Ltd. B.P.646,722: Appl. and filing 22/10/1947; Publ. 29/11/1950; U.S.A. appl. 22/10/1946. The invention relates generally to means for unwinding webs at constant linear speed, but particularly to a warp let-off motion for a warp knitting machine. The device comprises driving means for rotating the warp beam, and means geared to the shaft for steadily increasing the angular speed of rotation of the beam. Conveniently, the driven member may be a friction disc which is engaged by a pair of driving wheels at diametrically opposite points, the distance of the wheels from the centre of the disc being varied at a constant rate by mounting them on a screw-threaded shaft. C.

Shuttleless Pile Fabric Loom. T. B. Worth & Sons Ltd. and P. W. Robinson. B.P.646,729: Appl. 10/12/1947; Filing 10/12/1948; Publ. 29/11/1950. The invention relates to a method of binding-in a pair of double shots of weft in a pile fabric, particularly of the kind produced by the shuttleless pile fabric loom covered by B.P.611,926.* A loop of selvedge thread from a bobbin or like source is first inserted by the "needle" device through a pair of weft loops and held so that it is looped around the line defining its path of insertion, the next selvedge thread loop is inserted through the next pair of weft loops and through the preceding selvedge thread loop, and the latter is subsequently released. The mechanism is described in the seventeen claims and shown in four sheets of drawings. (*See *J. Textile Institute*, 1949, 40, A286.) C.

Loom Temple Supports. Thomas Hindle. B.P.646,767: Appl. 7/10/1948; Filing 30/9/1949; Publ. 29/11/1950. The invention relates chiefly to means for supporting temples on the front-rest of a loom so that they can be adapted to various cloth widths and heights and fell lines. Each temple is carried at the end of a holder bar in which it can be adjusted vertically, each bar is mounted in a clamp stand so that the rear edge of the temple can be adjusted to the fell line, and each clamp stand is slidably mounted on a temple rail for adjustment to the reed width. The parts are locked in position by set screws. C.

Loom Let-off Motion. Nathaniel Catterall. B.P.646,830: Appl. 20/5/1948; Filing 20/6/1949; Publ. 29/11/1950. The claim is for a let-off motion in which the ruffle brakes are controlled by devices that momentarily increase in force at each beat-up. Each braking appliance comprises a stationary curved bearing with frictional gripping surfaces on which the ruffle of the warp beam rests. Passing over the top of the ruffle is a chain, provided with frictional gripping surfaces, one end of which is detachably connected to a spring-controlled bolt carried by a fixture on the loom, whilst the other end is indirectly connected with a lever that extends across the end frame of the loom and is formed at its front end with a cam surface that co-operates with a runner mounted on the sley sword. The levers are coupled together and provided with compression springs that act as fulcrums and exert downward pressure. C.

Circular Knit Stocking Heel: Construction. Scott and Williams Inc. and H. N. Sheppard. B.P.646,922: Appl. and filing 28/4/1947; Publ. 29/11/1950; U.S.A. appl. 13/6/1946. The invention relates to means for strengthening the

tapered-gusset heel produced according to B.P.629,236,* especially at the inner ends of the suture lines joining the gussets when knitting fine-gauge stockings. (*See *J. Textile Institute*, 1950, 41, A352.) C.

Multi-ply Woven Fabric. Hildrop Silk Weaving Co. Ltd., Arthur Johnson and Joseph Seidler. B.P.646,977: Appl. 31/7/1948; Filing 30/5/1949; Publ. 29/11/1950. The general claim is for a cloth having two or more plies that are bound together during weaving by means of high-tenacity rayon stitching threads. A particular claim is for a two-ply cloth of 2/48s worsted yarn, 72 threads per inch, united by 10-denier nylon threads. C.

Carpet Manufacture. Brintons Ltd. B.P.656,525 of 22/8/1951. A method is claimed for incorporating rows of tufts in a fabric, at a speed comparable with that at which the rows of tufts can be produced, to give a fabric which has the wearing characteristics of a woven fabric. Each row of tufts is pressed in succession into a backing which has a surface layer of adhesive, and at the same time the backing is heated locally between a pair of electrodes, extending along the length of the row of tufts, and energised from a source of high-frequency electrical supply, to give a dielectric heating effect. On cooling, the adhesive hardens, but remains flexible. Apparatus for securing the tufts in this way is described. The adhesive is preferably an ungelled mixture of polyvinyl chloride with a plasticiser, *e.g.* tricresyl phosphate. W.

Fibrous Glass Fabrics [For Plastic Laminates]. Owens-Corning Fiberglas Corporation, and Anna S. Tallman. U.S.P.2,552,124: Appl. and filing 12/12/1945; Publ. 8/5/1951. C.

Yarn Tensioning Device. Specialties Development Corporation and Edward J. Heizer. U.S.P.2,554,493: Appl. and filing 22/8/1947; Publ. 29/5/1951. C.

Heat Insulating Blanket and Method of Manufacture. Johns-Manville Corporation, and William L. Stafford. U.S.P.2,554,963: Appl. and filing 3/7/1948; Publ. 29/5/1951. C.

Yarn Tensioning Device and Break Detector for Spoolers. Barber-Colman Co. and Harry G. Lind. U.S.P.2,555,045: Appl. and filing 4/11/1947; Publ. 29/5/1951. C.

Weaving Relief Designs in Pile Surfaces of Textile Fabrics: Method and Apparatus. Nye-Wait Co. Inc., Gustav E. Schulz and Harold H. Fonda. U.S.P.2,555,159: Appl. and filing 4/2/1947; Publ. 29/5/1951. C.

Shuttle for Weft-Replenishing Looms. Crompton & Knowles Loom Works, Raymond F. Dion and John T. Kennedy. U.S.P.2,555,845: Appl. and filing 10/1/1950; Publ. 5/6/1951. C.

Down-Winding Device. American Viscose Corporation, and William Charles Hanse. U.S.P.2,556,272: Appl. and filing 12/5/1948; Publ. 12/6/1951. C.

Harness Frame for Looms. Draper Corporation and Paul C. Consoletti. U.S.P. 2,556,468: Appl. and filing 28/2/1950; Publ. 12/6/1951. C.

[Hand] Loom [with Foot Operated Healds]. Arthur Booth. U.S.P.2,556,643: Appl. and filing 8/3/1947; Publ. 12/6/1951. C.

Pneumatic Thread Remover for Looms. Crompton & Knowles Loom Works, and Richard G. Turner. U.S.P.2,556,714: Appl. and filing 30/12/1949; Publ. 12/6/1951. C.

Loom Clutch and Stop Mechanism. Etablissements Fumat and Joseph Fumat. U.S.P.2,556,751: Appl. and filing 9/2/1949, in France 11/2/1948; Publ. 12/6/1951. C.

Electromagnetic [Stop Motion] Shuttle Protector System for Looms. Sidney Blumenthal & Co. Inc., and Arthur R. Abbott. U.S.P.2,556,785: Appl. and filing 2/6/1948; Publ. 12/6/1951. C.

Shuttle Propelling Mechanism. Hoosac Mills Corporation and Harold Hoeber. U.S.P.2,556,810: Appl. and filing 30/7/1947; Publ. 12/6/1951. C.

Loom Lay. Steel and Alloy Tank Co., Everett H. Ashton, and Robert G. Mallard. U.S.P.2,557,044: Appl. and filing 17/8/1946; Publ. 12/6/1951. C.

4—CHEMICAL AND FINISHING PROCESSES

Chemikalienkunde für den Textilveredler. Albert Schaeffer. Stuttgart: Konradin-Verlag, Robert Kohlhammer, 1951, xv+674 pages. In German. This book gives information about chemicals for the textile finisher. It is the fifth volume of the author's handbook of dyeing, and includes literature references and details of trade names. The preceding four volumes of "Handbuch der Färberei" are described as technical, scientific, experimental, and analytical parts of what is intended as a comprehensive work of reference. C—4.

Die neuzeitlichen Textilveredlungs-Verfahren der Kunstfasern. Part 4. F. Weber and A. Martina. Wien: Springer-Verlag, 1951, pp. 487-646. In German. The work of which this is Part 4, is concerned with modern techniques in finishing artificial fibre materials. It takes the form of a survey of patents and other literature from 1939 to 1949/50, and deals with the fibres themselves, bleaching, and dyeing and finishing. The present part is concerned with certain aspects of finishing (waterproofing, permanent finishing, combining and laminating, flameproofing, weighting); with leathercloth, linoleum, and velvet; and with the preparatory processes of desizing, degumming and washing. C—4.

(A)—Preparatory Processes

Enzymatic Desizing. J. Voss. *Melliand Textilber.*, 1950, **31**, No. 8, pp. 560-564. In German. The author sets out to explain the processes which take place when piece-goods are desized by means of enzymes. He gives a brief account of the various types of enzymes, discusses the structure of starch, and describes the experimentally observed decomposition of starch. C—4A.

Nonionic Surface-Active Agents—Their Chemistry and Utilization in the Textile Industry. Hillary Robinette. *Amer. Dyest. Rep.*, 1950, **39**, No. 25, pp. P888-P890. The preparation, properties and textile uses of non-ionic surface-active agents are explained briefly. The balance between hydrophobic and hydrophilic groups is said to be responsible for their water solubility and surface activity. The hydrophobic group is a long hydrocarbon chain of eight to eighteen carbon atoms; the hydrophilic group is an ethylene-ether configuration, $-OC_2H_4O-$. By variation of the number of ethoxy groups combined with the hydrophobic molecule, specific properties may be imparted to the compound. In addition to their wetting action, non-ionic agents can disperse lime soaps and will function well in hard or in salt water. They show no harmful effects on enzymes. Their detergent action, their emulsifying power, and their ability to promote level dyeing are mentioned. C—4A.

Nylon Stockings: Shaping Prior to Dyeing. Louis Gauthier. *l'Industrie text.*, 1948, **65**, pp. 347-348. In French. C—4A.

Textile Auxiliaries: Need for Control. Hans Stockhausen. *Melliand Textilber.*, 1950, **31**, No. 10, pp. 697-700. In German. The author discusses the problems created by the very large number of textile auxiliaries now on the market. He suggests that at least sufficient standardization should be aimed at to facilitate analysis and testing of these products. C—4A.

Textile Auxiliaries: Use. J. Edward Smith. *Chem. Engng News*, 1951, **29**, No. 7, pp. 548-551. This article deals with the use of chemicals in textile finishing. C—4A.

(B)—Boiling, Scouring, Degumming and Washing

Felting of Wool in Finishing. G. Fröb. *Deutscher Färberkalender*, 1951, **55**, pp. 19-24. In German. C—4B.

(E)—Drying and Conditioning

Infra-Red Heating: Application to the Drying of Fabrics and to Hardening of Synthetic Resins on Fabrics: Protection of Fibres. W. von Berlepsch-Valendas. *Melliand Textilber.*, 1950, **31**, No. 10, pp. 710-713. In German. Heat treatment of textiles is dealt with, mainly from the point of view of the machine builder. A radiator system is described in which the maximum emission can be adjusted to the effective absorption bands of any synthetic resin being treated. C—4E.

Centrifugal Separation. F. H. Slade. *Text. Mfr*, 1951, **77**, May, pp.218-221, and 225. Technical details, accompanied by photographs and diagrams, are given of three types of machines used for centrifuging: (1) centrifugal separators,

which are principally used in the purification of liquids, separation of liquid mixtures, and the recovery of suspended matter from liquids—in the textile industry their use is important in the purification of mercerising lye and in the recovery and purification of wool grease; (2) centrifugal machines, which deal with crystalline and granular material—these are used in the processing of cellulose acetate powder and, in the rayon industry, for the drying of sodium sulphate crystals; (3) hydro-extractors, which are used for the mechanical drying of all kinds of textile and fibrous materials. C—**4E.**

Infra-Red Heating and Drying. Geoffrey Broughton. *Bull. Lowell Text. Inst.*, 1951, **54**, No. 3, pp. 3-9. In the installation of infra-red heating or drying equipment for use in the textile industry, it is important to ascertain the infra-red absorption characteristics of the material to be treated. The wavelength and the temperature of the radiation, and the air velocity, are all factors which should be chosen to given optimum efficiency of drying. C—**4E.**

The Nagema Double-Deck Stentering Machine. Erich Krausse. *Faserforsch. u. Textiltech.*, 1951, **2**, No. 3, pp. 119-122. In German. The Nagema double-deck horizontal stentering machine is described. It is said to combine the advantage of the vertical stenter's small floor-coverage with the better hot-air circulation of the normal horizontal dryer. C—**4E.**

New Textile Drying Unit and a Combining Machine. Cheskova Ltd. *Text. Mfr.*, 1951, **77**, April, pp. 195-196. An account, illustrated with photographs, is given of a new textile drying unit using electric heating elements. It is designed to supply drying power wherever it is required by the processing machines, in a form requiring very little in space or installation, and a minimum of maintenance. C—**4E.**

(G)—BLEACHING

Bleaching of Absorbent Surgical Cotton Wool. A. Klein. *l'Industrie text.*, 1948, **65**, p. 320. In French. Maintenance of a high degree of absorbency in surgical cotton wool is discussed. C—**4G.**

Bleaching with Sodium Chlorite. Hermann Baier. *Melliand Textilber.*, 1950, **31**, No. 10, pp. 696-697. In German. The author outlines the probable mechanisms of four methods of activating sodium chlorite solutions for bleaching purposes: (1) addition of acid, (2) addition of hypochlorite or chlorine, (3) addition of formaldehyde or other aldehyde, (4) addition of a persulphate. The advantages of (1), at present considered to be the best method, are listed. Methods (3) and (4) have not yet been used for textiles; the reactions are much more complex and difficult to control. The paper is followed by a discussion. C—**4G.**

Bleaching of Vegetable Fibres. A. Klein. *l'Industrie text.*, 1948, **65**, pp. 345-346. In French. Methods of bleaching linen, hemp, jute and ramie are summarized. C—**4G.**

Sodium Chlorite as a Bleaching Agent, Particularly of Linen. F. L. J. van Lamoen. *Meded. Vezelinst. T.N.O.*, 1950, No. 101, 26 pages. In Dutch (English summary). This investigation concerned the suitability of sodium chlorite as a bleach for cellulosic materials, its properties, and the most suitable conditions for bleaching linen. The advantages and disadvantages of this agent are discussed, and views are put forward about probable reactions in given conditions of bleaching. Tests were made with chlorite-hypochlorite mixtures, but the results gave no grounds for further investigation of this method. Studies were made of degree of whiteness attainable, and of chemical deterioration of linen. Some practical hints on the application of sodium chlorite are included. C—**4G.**

Bleaching of Cotton Piece Goods. Wilhelm Hundt. *Deutscher Färberkalender*, 1951, 55, pp. 24-28. In German. The advance referred to is the continuous peroxide bleach. C—**4G.**

Peroxide Bleaching Liquors: Control of the Caustic-Silicate Ratio. K. D. Ballou, J. J. Roarke and G. M. Gantz. *Amer. Dyest. Rep.*, 1951, **40**, No. 7, pp. P218-P222. The ratio of caustic soda to sodium silicate in the peroxide solutions used in modern continuous bleaching ranges has been found to be critical. A volumetric method (based on the reaction of sodium fluoride with hydrous silica) has been found suitable as a plant control method of determining this ratio in peroxide bleaching liquors. Ions which interfere with the accuracy

of the titration are mentioned. By standardization of the silicate, fluoride, and acid used in the titration, it is possible to construct a nomogram which eliminates calculation of per cent. caustic and silicate. C—4G.

J Boxes and Steamers in Continuous Bleaching: Control. C. W. Bowden, Jr. and Drew B. Daubert. *Amer. Dyest. Rep.*, 1951, **40**, No. 9, pp. P286-P292. Problems connected with the control of conditions in continuous bleaching are discussed. Tests were carried out on du Pont J boxes, Becco J boxes and Mathieson steamers. C—4G.

Nylon: Bleaching. H. White. *Hosiery Underwear Rev.*, 1951, **34**, (10), 151-153, 164. Two products, *viz.*, Textone (sodium chlorite) and 40 per cent. peracetic acid, and two procedures that have been used to bleach nylon hosiery satisfactorily are described. Use of fluorescent bleaching agents, in particular Uvitex W.S., is discussed. H—4G.

Bleaching: Developments. E. R. Trotman. ("Bleaching cotton and rayon.") *Hosiery Trade J.*, 1951, **58**, (694), 52-4. Discusses the bleaching of cotton and rayon with sodium hypochlorite and with sodium chlorite. Example is given of the application of chlorite bleaching to hosiery finishing. H—4G.

(I)—Dyeing

The Cuprous Ion Method of Dyeing "Orlon" Acrylic Fibers with Acid Dyes. E. I. du Pont de Nemours & Co. *Du Pont Tech. Bull.*, 1951, **7**, No. 1, pp. 45-52. Details are given of a dyeing technique for a new type of "Orlon" staple called Type 41. C—4I.

Dyeing with Fast Avik Dyes. D. G. Kale. Kanpur (India): published by the author, 1949, 227 pages. The author uses the word "Avik" to describe the four classes of dyes discussed in his book: azoic, vat, indigosol, khaki. C—4I.

Dyeing of Solid Shades on Fabrics Containing Mixtures of Cotton or Regenerated Cellulose with Acetate Rayon. Cl. Blanchard. *l'Industrie text.*, 1948, **65**, pp. 319-320. In French. C—4I.

Dyeing Faults in Stockings: Their Cause and Removal. Heinrich Lint. *Melliand Textilber.*, 1950, **31**, No. 10, pp. 701-704. In German. C—4I.

Dyes: Removal from Fiber V. E. I. du Pont de Nemours & Co. *Du Pont Tech. Bull.*, 1951, **7**, No. 1, pp. 11-13. "Carrier" assistants used in conjunction with oxidizing or reducing agents are recommended for the removal of dyes from staple, top, tow, yarns and fabrics. At least 80 to 90 per cent. colour destruction is reported using certain aromatic carboxyl acids. C—4I.

Textile Coloring and Finishing Research Review. G. L. Royer. *Amer. Dyest. Rep.*, 1950, **39**, No. 25, pp. P877-P887. This is a review of recent publications relating to the dyeing of wool, acetate rayon, nylon, cotton, and viscose rayon, and to the printing and finishing of textiles generally. There are one hundred and forty-five references. C—4I.

Vat Dyeing Polyamide and Polyurethane Fibres. J. Müller. *Melliand Textilber.*, 1950, **31**, No. 8, pp. 564-569. In German. Comparisons are made of the vat-dyeing properties of polyamide and polyurethane fibres on the one hand, and viscose rayon on the other. The synthetic fibres are more difficult to dye because of the greater dependence on temperature, poorer levelling, and more difficult oxidation conditions. All these differences are attributed to the smaller swelling capacity of these fibres. Pre-steaming effects a marked improvement in dye affinity, levelling, and light-fastness. C—4I.

Albigen A. R. Ebert. *Deutscher Färberkalender*, 1951, **55**, pp. 137-144. In German. Albigen A, polyvinylpyrrolidon, is a new dye assistant introduced by Badische Anilin-und Sodafabrik. C—4I.

Vat-Dyeing: Contemporary Practice. Ormond W. Clark. *Amer. Dyest. Rep.*, 1951, **40**, No. 10, pp. P315-P322. A brief survey is given of some of the vat-dyeing procedures and equipment which are of particular interest to production dyers. The subject is dealt with from the practical point of view of a vat-dye demonstrator. The discussion includes: continuous processes for dyeing cloth, continuous processes for warp dyeing, and certain aspects of package dyeing. C—4I.

Deutscher Färberkalender 1951. O. Mecheels (Editor). München: Franz Eder Verlag, 1951, xxii + xx + v + 256 + 64 + 59 + 45 pages. In German. The 55th

issue of the German Dyestuffs Calendar contains in addition to the articles noted elsewhere in these Abstracts, a diary section; articles on mercerization, the position of finishing in the textile economy, and the Textometer electrical hygrometer; notes on the qualitative examination of wetting agents, washing agents and dyestuffs; details of new dyes and textile auxiliaries, German rayon and synthetic fibres, dyeing schools, and public testing houses; chemical data; conversion tables; and an index to trade names, products, and makers of particular classes of materials. C—4I.

Dyeing of Algosols on Hosiery. K. A. Bridges. *Amer. Dyest. Rep.*, 1951, 40, No. 11, pp. P354-P356. Algosols, the water soluble leuco-esters of vat dyestuffs, are found to be very useful in the vat dyeing of hosiery. They become fast on the fibres after being developed to the original vat dyestuff by the action of oxidizing agents in the presence of acid. Their chief advantages are said to be ease of application on conventional hosiery equipment, good levelling and penetrating qualities, and excellent duplication of shade on successive dyeings. At the same time, the cost of dyeing with Algosols is less than with the water-insoluble vat dyes. Details of their working properties and application are included. C—4I.

The Dyeing of Women's Stockings Made from Synthetic Fibres. Werner Steger. *Deutscher Färberkalender*, 1951, 55, pp. 70-73. In German. C—4I.

Fifty Years of Indanthrene [Colours]. Hans Kiess. *Deutscher Färberkalender*, 1951, 55, pp. 73-77. In German. C—4I.

The Finisher's Position Regarding New Synthetic Fabrics. Francis S. Richardson. *Amer. Dyest. Rep.*, 1951, 40, No. 7, pp. P223-P224. The following topics are very briefly discussed: (1) the position of dyers, printers and finishers before the development of synthetic fibres; (2) changes in their work on the introduction of regenerated fibres; (3) the development of true synthetic fibres; (4) the mechanical and chemical problems for finishers caused by various fibres; (5) the possibility of other new synthetic fibres, with comments concerning the finishers' needs, attitudes, and responsibilities. C—4I.

Dye Chemistry: Fundamental Processes. Hans Eduard Fierz-David and Louis Blangey. New York: Interscience, 1949, xxix+479 pages. This is a translation by Paul W. Vittum of the fifth Austrian edition of *Grundlegende Operationen der Farbenchemie*, a work intended to introduce to the beginner the methods of dye chemistry. It is divided into six sections: intermediates, dyes, technical details, analytical section, analysis of commercial dyes, and determination of light fastness; and has twenty-one diagrammatic tables of dyestuff derivatives, and a subject index. C—4I.

Garment Dyeing and the New Fibres. Karl Ottenschläger. *Deutscher Färberkalender*, 1951, 55, pp. 58-70. In German. C—4I.

The Insoluble Azo Dyestuffs of the Naphthol AS Series. H. Hauptmann. *Deutscher Färberkalender*, 1951, 55, pp. 38-58. In German. C—4I.

Intermediates and Colouring Matters. D. A. W. Adams, E. L. Johnson, and J. Wardleworth. *Reports on the Progress of Applied Chemistry*, 1949, 34, pp. 244-292. This review of the literature for 1949 is divided into four parts: (1) Intermediates, which has two hundred and two references; (2) Azo Dyes, which has one hundred and twenty-six references; (3) Anthraquinone Dyes, Phthalocyanines and Miscellaneous Dyes, which has seventy references; and (4) Colourless Fluorescent Dyes—Optical Bleaching Agents, which has eighteen references. C—4I.

Dyeing of Chemstrand Acrylic Fiber. J. A. Woodruff. *Amer. Dyest. Rep.*, 1951, 40, No. 13, pp. P402-P408. An introduction is presented to the dyeing of Chemstrand acrylic fibre. Wool dyes were used, as the acrylic fibre resin was modified to give acid-dyeing properties. The effects of variables on dyeing, such as time, temperature, *pH*, volume ratio, and Glauber's salt, are illustrated (with photographs) in regard both to depth of shade and penetration of individual fibres. The bulk practice of piece dyeing is discussed, together with some remarks about yarn and stock dyeing. The finishing of piece goods is also discussed. C—4I.

Stripping of Dyed Textile Materials. J. Wakelin. *Amer. Dyest. Rep.*, 1951, 34, No. 19, pp. 370-371. The familiar and a few of the newer processes used for stripping and decolourizing textile materials are briefly reviewed. C—4I.

Package Dyeing. Ernest L. Caswell. *Amer. Dyest. Rep.*, 1951, **40**, No. 8, pp. P257-P261. The effect of the following on the successful dyeing of yarn in package form is discussed: kind of yarn, type of package and holder, character of winding, extraction and drying of packages, and characteristics of the circulating machine used. C—4I.

PeCe and Perlon from the Point of View of the Finisher. G. Salzmann. *Deutscher Färberkalender*, 1951, **55**, pp. 12-19. In German. C—4I.

Dyeing and Finishing of Synthetics: Present and Future Developments. William F. Brosnau. *Amer. Dyest. Rep.*, 1951, **40**, No. 11, pp. P350-P353. Thirteen items of new machinery for use in finishing plants processing modern synthetic fabrics are listed. Wet processing and finishing procedures for synthetic flat goods and rope-handled constructions are discussed. C—4I.

Wool and Unions: Single Bath Chrome Dyeing. Karl Wojatscheck. *Deutscher Färberkalender*, 1951, **55**, pp. 78-83. In German. C—4I.

The Sirius Dyestuffs. H. Hansen. *Deutscher Färberkalender*, 1951, **55**, pp. 28-38. In German. The Sirius dyestuffs are new direct cotton colours introduced by Farbenfabriken Bayer. C—4I.

Uneven Dyeings: Some Causes. T. C. Hutchins. *Amer. Dyest. Rep.*, 1945, **34**, No. 18, pp. 344-346. Among frequent causes of uneven dyeings in fabrics the following are mentioned: (1) quality of yarn, (2) the sizing used on the fabric, (3) the uneven distribution of size on the fabric and inefficient desizing before dyeing, (4) weaving faults, (5) uneven singeing, (6) retention of impurities in highly twisted yarns after scouring and soaping, and (7) inefficient bleaching. C—4I.

Garment Dyeing: Important Auxiliaries. ("Some Important Textile Auxiliaries for the Garment Dyer.") C. Rackemann. *Deutscher Färberkalender*, 1951, **55**, pp. 104-109. In German. C—4I.

[Dyeing] The Standfast Molten-Metal Continuous Dyeing Process. Charles J. Weidmann. *Amer. Dyest. Rep.*, 1951, **40**, No. 13, pp. P416-P422. The Standfast dyeing machine is described and its numerous advantages over other methods of dyeing are elaborated. C—4I.

Tricot, Dyeing and Finishing: The Knitter's Point of View. ("A Tricot Knitter Looks at Dyeing and Finishing.") C. A. Pembroke. *Text. Age*, 1951, **15**, No. 4, pp. 62-68. The author lists points to be considered by manufacturers of warp-knitted fabric now entering the dyeing field who formerly sent their fabrics to commission dyers for finishing. Locality is discussed from the point of view of water supply and sewage disposal, and there are special notes on dyehouse equipment, the dyeing and finishing cycle of operations, dyeing nylon tricot, heat-setting nylon, bleaching, and choosing the right dyes for nylon. C—4I.

Colourless Acids and Dye Acids: Behaviour towards Wool. ("Das Verhalten von farblosen Säuren und Farbstoffsäuren gegen Wolle.") H. Gerstner. *Melliand Textilber.*, 1951, **32**, 388-391. The maximum combining capacity of wool with colourless acids and with dye acids is realised at a *pH* of 1·3. The difference in behaviour of the colourless acids and the dye acids is due to the fact that the acid which diffuses with greater difficulty at the same degree of ionisation is more difficult to hydrolyse. Because of the difficulty experienced in hydrolysing the dye acids, it is suggested that they combine with the wool through a second linkage between the carboxylic acid groups in the wool and the basic groups of the dye acid. W—4I.

Wool: The Problem of Dyeing in Mixtures with Other Fibres. H. Luttringhaus. *Amer. Dyest. Rep.*, 1951, **40**, 436-8. In this paper the dyeing of the following mixtures is discussed: wool-Vicara, wool-nylon, wool-Orlon A3 staple fibre, and wool-Dacron. W—4I.

Dacron: Dyeing. Florence Thread Co. *Hosiery Ind. Wkly*, 1951, **60**, (16), 3. Announcement of the successful dyeing of Dacron yarn in many different shades. H—4I.

Dyeing Methods: Review. I. Reiner. *Knitted Outerwear Times*, 1951, **19**, (40), 27. Paper read at a meeting of A.A.T.C.C. held in Philadelphia on 14/9/51.

Dyeing methods are discussed. Continuous pad steam method was most effective in the vat dyeing of rayon and cotton. Most economical methods are vat, acid, wet steam and pigment wet steam. **H—4I.**

Fully-fashioned Hosiery: Dyeing. J. Koch, Jr. ("Observations on the dyeing of 15 denier full-fashioned hosiery.") *Hosiery Industry Wkly*, 1951, **60**, (10), 10-17. Part 1. First of four parts of a paper presented before a meeting of the A.A.T.C.C. This part reviews pre-boarding and pre-steaming. *Ibid.*, 1951, **60**, (11), 10-11. The bagging and scouring procedure for fully-fashioned hosiery is discussed, the latter in detail. *Ibid.*, 1951, **60**, (12), 16, 23. The dyeing of nylon is discussed and the use of non-ionic assistants in the dyebath to promote dispersion and levelling. *Ibid.*, 1951, **60**, (13), 15, 17. The mechanics of matching hosiery shades, the finishing, dulling of nylon hosiery and the evaluation of stockings is discussed. **H—4I.**

(J)—PRINTING

Catalytic and other Fibre Damage Caused in Printing. W. Schönberger. *Melliand Textilber.*, 1950, **31**, No. 9, pp. 636-638. In German. A brief account is given of mechanical and chemical damage to textile fibre during printing. This is followed by a detailed discussion of the catalytic damage which occurs when alkaline printing pastes containing Rongalit C are used on cellulosic fabrics in the presence of metallic compounds such as iron and copper salts. The fibre can be protected against such damage by aromatic polyhydroxy or polyamino compounds. **C—4J.**

Direct Printing of Aniline Black on Rayon: A Contribution to Fibre-Protection and the Manufacture of a Non-Greening Black. W. Schramek. *Melliand Textilber.*, 1950, **31**, No. 8, pp. 571-575. In German. The theory of formation of aniline black by the ferrocyanide ageing process, and the suspension process, is discussed with reference to greening and damage to the fibre. Measures for countering both faults are discussed at length. **C—4J.**

The Intensifying Action of Organic Substances in Calico Printing. Herm. Berthold. *Melliand Textilber.*, 1950, **31**, No. 8, pp. 575-576. In German. The author discusses the theories which underlie the intensifying action of urea and thiourea in calico printing. **C—4J.**

Printing on Vinyl Film. Robert W. Riedel. *Modern Plastics*, 1951, **28**, No. 8, pp. 81-86, 189-190, 193-194, 196, 199. This is an account of methods of printing on vinyl film, giving details of the processes of drum-type gravure, unit-type gravure, surface printing, transfer printing, aniline printing and silk-screen printing. **C—4J.**

Steaming of Prints on Cotton, Spun Rayon and Rayon Staple. Herbert Barth. *Melliand Textilber.*, 1950, **31**, No. 10, pp. 707-710; No. 11, pp. 771-774. In German. The chemical and physical processes which take place during the steaming of vat-dye prints are discussed in some detail, with a view to discovering the best steaming conditions. Physical processes require as much attention and control as the chemical processes. **C—4J.**

Textile Printing: II. Analytical Methods for Determining the Vat Dye Contents of Textile Prints. C. R. Witschonke and F. Fordemwalt. *Amer. Dyest. Rep.*, 1950, **39**, No. 10, pp. 621-624, 646. Two quantitative analytical procedures are presented for the determination of: (1) the exact quantity of a vat dye applied to a fabric during the printing operation, and (2) the amount of dye which remains in the fabric after each of the various finishing operations, such as ageing, oxidizing, and soaping. **C—4J.**

Textile Printing: Ageing Faults. J. H. Downey. *Text. Age*, 1951, **15**, No. 6, pp. 30-32. The maintenance of a constant pressure inside the steaming chamber is essential for good colour-fixation. The author describes some of the causes of loss of pressure in steaming chambers. **C—4J.**

Textile Print Thickeners. Anon. *Amer. Dyest. Rep.*, 1951, **40**, No. 12, pp. 369-371. This paper, reprinted from the Canadian Textile Journal, attempts to show the variety of ways in which thickenings may be used. Topics dealt with include: uses of starches, the plain roller, cold swelling starches, British gums and their unusual uses, the use of "dry" British gum, hand block printing, crystal gums, natural gums, tragacanth, and vat discharge printing. **C—4J.**

Textile Printing: Some Technical Considerations in Colour Mixing. Anon. *Text. Rec.*, 1951, **69**, July, pp. 87-88. This article deals with important points in colour mixing for textile printing, and covers the colour yield, the use of chrome mordant dyes, fixation with Persian berry extract, the stabilized azoic dyestuffs and the advantages of vat colours. C—4J.

(K)—FINISHING

Crease-Resistant Finishing Processes. W. Gutmann. *Melliand Textilber.*, 1950, **31**, No. 9, pp. 639-643. In German. Every step in the process of crease-resistant finishing is explained, and special attention is given to such difficult aspects as the choice of fibre, yarn and fabric; preparation of the bath; and the method of drying. Some fibres and fabrics are not suitable for treatment. The author stresses the need for co-operation in all sections of the industry, from fibre manufacturer to machine maker, if really good finishing is to be achieved. C—4K.

Crease-Resist Finishing. Hans Arnold. *Deutscher Färberkalender*, 1951, **55**, pp. 96-103. In German. C—4K.

Current Finishing Progress. A. J. Hall. *Amer. Dyest. Rep.*, 1945, **34**, No. 18, pp. 340-343. Information is given on some new developments in the textile industry. The new developments covered include the following: (1) a new method for animalizing cellulose fibres, which involves the use of a resin resulting from condensation of formaldehyde and dicyandiamide; (2) new "metallized" direct dyes which do not stain acetate rayon; (3) the adaptation of the cuprammonium fluidity test for the determination of damage in linen goods; (4) new nylons or interpolyamides having high softening points; and (5) a new melamine-cellulose ether composition for coating fabrics to make them stiff and water-resistant. C—4K.

Netting: Finishing. Adolf Gebhardt. *Deutscher Färberkalender*, 1951, **55**, pp. 122-127. In German. C—4K.

Odor Prevention in Resin Treated Fabrics. L. A. Fluck, G. J. Keppler, T. F. Cooke and C. L. Zimmermann. *Amer. Dyest. Rep.*, 1951, **40**, No. 5, pp. P154-P160. The unpleasant odours which develop when textiles are treated with thermosetting aminoplasts, such as urea- and melamine-formaldehyde resins, have been studied. A mechanism is suggested for the development of the odour. The addition of a formaldehyde acceptor, such as urea, to the resin bath was found to prevent odour formation in the treated fabrics. A sensitive, reproducible odour test for resin-treated fabrics was developed. C—4K.

Papain in the Textile Industry: Potentialities. J. Wakelin. *Amer. Dyest. Rep.*, 1945, **34**, No. 19, pp. 371-372. The effect of the enzyme papain on wool is briefly noted. It can be used for removing sericin from silk mixture fabrics, for stripping textiles, for washing soiled fabrics, for making wool non-felting, and for developing a silky appearance on wool which has previously been treated with chlorine. C—4K.

Softeners in the Textile Industry. Wilhelm Brasseler. *Deutscher Färberkalender*, 1951, **55**, pp. 109-117. In German. C—4K.

Rayon Fabrics: Softening and Lubrication. Robert R. Ackley. *Amer. Dyest. Rep.*, 1945, **34**, No. 18, pp. P348-P350. The softening and lubricating processes used in rayon finishing, and the general principles involved in softening and lubricating operations, are discussed. The following uses of cationic finishing agents are listed: (1) to render fabrics resistant to mildew and other bactericidal and fungicidal action, (2) in conjunction with resins to make the fabric more resistant to the effects of laundering and dry-cleaning, (3) as emulsifying agents in the preparation of improved delustring or dulling agents, and (4) with non-resinous materials to provide improved fullness while retaining the soft character of the finished fabric. C—4K.

Textile Processing: Some New Chemicals. John S. Trevor. *Text. Rec.*, 1951, **69**, July, pp. 91-92. In this review of some of the newly-developed chemicals for textile processing and finishing, notes are given on acrylonitrile, the guanidine derivatives, acetic anhydride, propiolactron, the ethylethanolamines and the polyethylene glycols. C—4K.

Textile Finishing: Some Problems. Egon Elöd. *Deutscher Färberkalender*, 1951, **55**, pp. 1-12. In German. This is a review with nineteen references. C—4K.

Kaurit: Use. Hans Friedrich. *Deutscher Färberkalender*, 1951, **55**, pp. 153-158. In German. Kaurit B Paste is a new urea-formaldehyde condensation product introduced by Badische Anilin- und Sodafabrik. C—4K.

Wool Blankets: Modern Finishing. Rudolf Schnaufer. *Deutscher Färberkalender*, 1951, **55**, pp. 118-122. In German. C—4K.

Soft Worsted Cloths: Formation of Cover. Anon. *Wool Rec.*, 1951, **80**, 1072, 1075, 1077. Faults arising during wet-finishing of fine high-grade yarn-dyed fabrics are discussed. Crabbing is advocated and temperatures suitable for various colours are given. Rubbing must be avoided and the places where this is likely to occur are pointed out. The type of soap to be used and a suitable scouring procedure are suggested. W—4K.

Anti-shrink Treatments. ("Traitements antirétrécissants.") A. Pradon. *Teintex*, August, 1951, **16**, 405-419. A review is given of mechanical and chemical anti-shrink treatments for wool and cellulosic fibres, together with methods for identification and determination of formaldehyde resins on cellulosic fibres. W—4K.

Hosiery: Linkless-toe: Pre-boarding. J. Hamilton. ("Pre-boarding linkless-toe hosiery.") *Hosiery Underwear Rev.*, 1951, **34**, (9), 157-8. Discusses the pre-boarding of the linkless-toe hosiery. Illustrations. H—4K.

(L)—PROOFING

Rubberizing: Technique and Characteristics of Weaves Suitable for Rubberizing. Fernand Louvier. *l'Industrie text.*, 1948, **65**, pp. 343-344. In French. A brief survey is made of the preparation of rubber mixes, and calendering and vulcanization processes. Faults and their elimination are discussed. C—4L.

Vinyl-Coated Fabrics [Continuous Processing]. E. Dalton White. *Text. World*, 1951, **101**, No. 6, pp. 135, 137, 194, 196. Research and engineering at the Woodhead plant of Graniteville Co. have resulted in the planning of equipment and methods which ensure a minimum time-loss on the whole range of processes covered by vinyl-coating of fabrics. Temperatures and air flow are controlled during processing, and good use made of the heated air. C—4L.

Finishing Fabrics: Post-war Possibilities. H. C. Borghetty. *Amer. Dyest. Rep.*, 1945, **34**, No. 19, pp. P364-P366. Brief reference is made to the use of various finishes as durable water repellents, for mildew-proofing and flame-proofing, and as semi-durable water repellents for raincoats. A very fast to leaching complex, formed by dihydroxy-dichlor-diphenylmethane and quaternary ammonium compounds, is mentioned. C—4L.

Titanium as an Agent for Imparting Durable Fire-Retardancy to Fabrics. A. E. Jacobsen, W. F. Sullivan and I. M. Panik. *Amer. Dyest. Rep.*, 1951, **40**, No. 14, pp. P439-P443. A classification of fire-retardants is given. Previous studies of the use of solutions of titanium-antimony chloride-acetate are discussed, and results are reported using silicates in the neutralization bath to minimize afterglow. Fabrics of various weights can be successfully fire-retarded by means of titanium-antimony-silicon treatment. Fire retardant properties and analyses of four-ounce sheetings are presented, showing retention of agents through twenty-four launderings. Studies in connection with the fire-retardant mechanism are reported and explanations proposed. The studies are supplemented with photomicrographs. C—4L.

PATENTS

Fluorescent Stilbene-Derivative Whitening Agents. Imperial Chemical Industries Ltd., and R. H. Wilson. B.P.645,413: Appl. 14/10/1947; Filing 13/10/1948; Publ. 1/11/1950. Whitening agents of the fluorescent type are obtained by the interaction of cyanuric chloride with, in any order, one molecule of 4:4′-diaminostilbene-2:2′-disulphonic acid (or a salt), two molecules of dimethylamine or morpholine, and two molecules of a primary or secondary aliphatic amine free from hydroxyl groups, or of a primary aromatic amine which is either free from substituents or which carries as nuclear substituents one or more alkyl radicals and/or one radical of the pair $-OMe$ and $-SO_2NH_2$. Four examples are described in detail. C.

Mercury-Bath Yarn-Coating Device. Fassoply Ltd., and D. J. Lodge. B.P. 645,727: Appl. 18/5/1948; Filing 11/5/1949; Publ. 8/11/1950. Apparatus for coating or impregnating a running yarn with plastics (such as vinyl polymers or latex) comprises a container for mercury, with a partition reaching nearly to the bottom, one side of the container being supplied with the plastic solution or dispersion. The yarn is drawn down through the plastic, under the partition, and up through the mercury to a drying chamber. If the speed is correctly adjusted, scarcely any loose plastic need be carried over to the exit side of the bath. C.

Acylated Amino-anthraquinone Vat Dyes. Ciba Ltd. B.P.646,171: Appl. and filing 18/11/1947; Publ. 15/11/1950; Swiss appl. 18/11/1946 and 15/9/1947 [Addition to B.P.605,466*]. The claims relate to the manufacture of 1-acylamino-4-[(N-dialkyl)-sulphonamidobenzoylamino]-anthraquinones and related N-dialkylene compounds in which the alkylene residues are connected in a ring system, by the acylation of 1-amino-4-acylamino-anthraquinones in such a way that the products contain in one amino group the residue of a pyridine (or quinoline) carboxylic acid and in the other amino group the residue of an N-dialkyl (or N-dialkylene)-sulphonamidobenzoic acid. The products give pink dyeings on cotton and other fibres. (**J. Textile Institute*, 1949, 40, A105.) C.

Block Printing Apparatus. Walter Geiringer. B.P.646,172: Appl. and filing 18/12/1947; Publ. 15/11/1950; Australian appl. 24/12/1946. The invention relates to a method and apparatus for printing textiles in which the material is gummed on the reverse side, then fed to the endless blanket of the printing table, pressed firmly on the blanket and detached after printing. The seventeen claims cover the gumming and pressure rollers, devices for regulating the amount of gum applied to the cloth, means for washing the blanket and removing excess water (by a doctor blade) on its return from the printing operation, and a drying chamber in which the cloth is stripped from the blanket. Details are shown in five sheets of drawings. C.

Trubenised Wearing Apparel: Production. Trubenised Ltd. B.P.646,200: Appl. and filing 30/4/1947; Publ. 15/11/1950; Swedish appl. 30/4/1946. Permanently stiffened articles of wearing apparel are made by fusing together two outer plies of non-plastic fabric with an inner ply of material (for example, cellulose acetate) that becomes adhesive when wetted with a mixture of an "active solvent", 7½-10 per cent. (for example, acetone or methyl acetate), a "latent solvent", 12½-20 per cent. (for example, triacetin, benzyl alcohol, tetrahydrofuryl alcohol), and a diluent (for example, 60-70 per cent. of methyl or ethyl alcohol and 0-15 per cent. of water). The articles are soaked in the solvent mixture, centrifuged or mangled, and then hot-pressed. C.

Stiffened Washable Textile Fabrics and Wearing Apparel: Production. Paul Frankfurther. B.P.646,450: Appl. 5/11/1947; Filing 23/3/1949; Publ. 22/11/1950. A process for stiffening washable materials (for example, tablecloths and the interlining fabric for collars and cuffs) comprises the application of an insoluble thermoplastic vinyl resin softened by means of an agent that can be washed out (for example, an emulsion of polyvinyl acetate containing dibutyl phthalate and triacetin). C.

Tiltable Roller Cloth Selvedge Guider. Mount Hope Machinery Co. B.P. 646,566: Appl. and filing 5/12/1946; Publ. 22/11/1950; U.S.A. appl. 17/5/1945. The invention relates to a cloth guider that comprises a pivoted frame (A) carrying a pair of rollers for engaging the selvedge, a sensitive rotary element (B) that makes frictional engagement with the selvedge if this is not running true, and a connection between A and B that effects tilting of A sufficient to correct the displacement if B begins to rotate. Details are covered by twenty claims and shown in four sheets of drawings. C.

Nylon Fabric: Dyeing and Printing. Ciba Ltd. B.P.646,742: Appl. and filing 30/3/1948; Publ. 29/11/1950; Swiss appl. 2/4/1947 and 27/2/1948. Nylon fabrics are dyed or printed with acid wool dyes or direct cotton dyes by incorporating in the liquor or paste a salt of a volatile base with a less volatile acid (for example, ammonium tartrate and/or a heat-decomposable ester, so as to furnish acid when the fabric is steamed. C.

Cellulose Acetate Yarns and Fabrics: Dyeing with Vat Dyes; Use of "Stabilised" Hydrosulphite. T. E. Marchington & Co. Ltd., G. D. Sutton and O. Boothby. B.P.646,769: Appl. and filing 29/10/1948; Publ. 29/11/1950.

Cellulose acetate textiles are vat dyed without the use of swelling agents by making up the dye liquor with about 5 per cent. of a "stabilized" sodium hydrosulphite solution, that is, a solution of about 20° Tw. having a *pH* 10·5 to 11·0, obtained by mixing the salt with an alkaline calcium compound, for example, lime or calcium cyanamide, and filtering. C.

Nylon Hosiery Electrically-controlled Setting Apparatus. Paramount Textile Machinery Co. B.P.646,826: Appl. and filing 20/1/1948; Publ. 29/11/1950; U.S.A. appl. 16/5/1947. The invention relates principally to apparatus in which the operations of (1) opening the door, (2) admitting steam, (3) exhausting the steam, (4) opening the door, and (5) removing the carriage with its forms are actuated or controlled electrically, and the door operating mechanism is automatically released on the occurrence of any undue obstruction. Various valves and timing mechanisms are covered in the sixteen claims and illustrated in eleven sheets of drawings. C.

Naphthopyridine Derivatives: Application to Cellulose Ester Dyeings to Inhibit Gas Fading. General Aniline and Film Corporation, H. W. Grimmel and A. Guenther. B.P.646,832: Appl. and filing 13/8/1948; Publ. 29/11/1950; U.S.A. appl. 18/10/1947. To render dyeings on cellulose acetate and related derivatives resistant to fading in the fumes of burnt gas, the material is treated at any stage (for example, concurrently with the dyeing) with an aqueous dispersion of a naphthopyridine, for example, 3-hydroxytetrahydro-5:6-, or 5-hydroxytetrahydro-2:3-naphthopyridine. C.

Anthraquinone Vat Dyes: Production. Ciba Ltd. B.P.646,950: Appl. and filing 22/12/1947; Publ. 29/11/1950; Swiss appl. 21/12/1946 and 10/12/1947. A process for the production of vat dyes that give fast dyeings on cotton in the yellow and violet ranges consists in acylating (for example, with an acid chloride) an anthraquinone derivative containing in a β-position a sulphonic acid amide group, and elsewhere at least one amino group. The sulphonamide group may be an N-dialkylsulphonamide group or an N-dialkylenesulphonamide group in which the alkylene residues are interconnected in a ring. C.

Cellulose Derivatives: Continuous Precipitation from Solution. Hercules Powder Co. and Herman Fox. B.P.646,971: Appl. and filing 27/4/1948; Publ. 29/11/1950; U.S.A. appl. 26/12/1947. Cellulose derivatives are continuously precipitated from solutions in organic solvents (for example, cellulose acetate from the acidic dope) by feeding the solution and an aqueous liquid in controlled amounts into a precipitating chamber of the hammer mill type in which the liquids are vigorously agitated together, and the precipitate is milled and ground and washed through restricted openings to control the particle size. C.

Fibrous Materials: Process for Softening. CIBA Ltd. B.P.653,732 of 23/5/1951. Fibrous materials are softened by treatment with an aqueous dispersion of a compound containing at least one aliphatic chain of at least 12 carbon atoms, *e.g.* esters and amides of fatty acids of high molecular weight. Suitable dispersing agents are the condensation products of *N*-methylolamides of higher fatty acids with mercapto-carboxylic acids. A sulphonation product dispersing agent which resists lime may also be used if desired. Examples relate to the treatment of wool, chlorinated wool, cellulose acetate yarn, and viscose yarn. W.

Vesicant Particles: Removal. J. S. Reichert and R. W. Peakes (to the U.S.A., as represented by the Secretary of War). U.S.P.2,540,140 of 6/2/1951. Wool clothing is made permeable to air and inert gases, and impermeable to mustard gases and similar substances, by immersion in an organic hypochlorite, *e.g.* tertiary butyl or amyl hypochlorite. The speed of the chlorinating action is increased by increasing the moisture content of the wool prior to treatment. The material is preferably impregnated with an acid-inhibiting buffer, *e.g.* sodium acetate, before regulating the moisture content. After chlorination, it may be washed with carbon tetrachloride. Other chlorinating agents may be used, *e.g.* acidified hypochlorite salts, and hypochlorous acid. W.

Apparatus for the [Liquid] Treatment of Rayon Cakes. Oscar Kohorn & Co. Ltd., Alfred Politzer, and Herbert Oswald Naumann. U.S.P.2,553,110: Appl. and filing 6/10/1947; Publ. 15/5/1951. C.

Pile Fabric Cutter. Merrimack Mfg Co. and Alexander T. Herron. U.S.P. 2,554,529: Appl. and filing 13/1/1949; Publ. 29/5/1951. C.

Apparatus for [Controlled Shrinkage] Treating [Nylon] Synthetic Fibers. Synthane Corporation, and Clarence B. Moss. U.S.P.2,554,537: Appl. and filing 13/4/1950; Publ. 29/5/1951. C.

Method of Treating [with Liquid] a Tow of Filaments or Threads [In a Limited Space]. Imperial Chemical Industries Ltd., Robin H. K. Thomson, William E. Tetlow, and Archibald M. McDonald. U.S.P.2,555,065: Appl. and filing 14/1/1948, in Great Britain 10/3/1947; Publ. 29/5/1951. C.

Rubber: Improving Adhesion to Cellulosic Fibrous Materials [By Use of Dialkyl Esters of Dicarboxylic Acids]. Callaway Mills Co. and Fred S. Perkerson. U.S.P.2,555,304: Appl. 17/8/1946; Publ. 5/6/1951. C.

[Polyvinyl Chloride] Coated Products. E. I. du Pont de Nemours & Co., and Arthur Bernard Ness. U.S.P,2,556,885: Appl. 27/6/1946; Publ. 12/6/1951. C.

Felting and Shrinking: Stable Bath for Treating Wool Yarn and Products derived from it. Textilwerk A.-G. Swiss P. 270,037 of 1/12/1950 (through *Chem. Abstr.*, 1951, 45, 8262). Melamine resin 2 g./l., formaldehyde 2 g./l., and 40 per cent. by weight of formic acid in water at 25° are used for treating the material for 30 minutes. It is then centrifuged and dried. W.

5—ANALYSIS, TESTING, GRADING AND DEFECTS

British Standards Institution Year Book 1951. British Standards Institution. London: British Standards Institution, 1951, 399 pages. The main part of this book lists the current British Standards, and gives a short description of each. It also includes a classified list of work in hand, and details of the membership of the different committees. C—5.

High Speed Motion Picture Photography in Textile Research. Malcolm D. Pearson. *Whitin Rev.*, 1950, 17, No. 6, pp. 25-28. The author briefly explains the principle of high speed photography and indicates some of the problems that have been investigated by this technique in the field of textile research. Some photographs are shown. C—5.

Textile Testing: Evaluation of Results and their Presentation. Part III. Max Matthes. *Melliand Textilber.*, 1950, 31, No. 10, pp. 683-688. In German. In this article statistical methods are applied to the evaluation of results obtained by test methods previously described. (See *J. Textile Institute*, 1951, 42, A322.) C—5.

Textile Untersuchungen. M. Nopitsch. Stuttgart: Konradin-Verlag, Robert Kohlhammer, 1951, liv+322 pages. In German. The author of this comprehensive textbook on textile testing was, for twenty years, Head of the Chemistry Department at the Textile Testing Institute, München Gladbach, and in it, he attempts to sum up his knowledge and experience. The book is divided into two main parts: the first deals with the theory and methods of textile testing, and the second with types of damages and defects in textile materials. There is some consideration of the physiology of clothing. The fifty-one plates at the end of the book include illustrations of testing machinery, and photomicrographs of textile fibres and materials. C—5.

(A)—FIBRES

Rayon Staple Fibre: Behaviour Under Constant and Under Intermittent Loads. A. Zart. *Melliand Textilber.*, 1950, 31, No. 9, pp. 593-594. In German. *Melliand Textilber. (English Edition)*, 1950, II E, pp. 33-34. In English. The author discusses the different fatigue effects noted in rayon staple fibre, according to whether they are caused by a constant or an intermittent load. C—5A.

Heat Transfer through Hollow Rayon Staple, Normal Rayon Staple and Cotton: Comparison. Haydar Edemen. *Faserforsch. u. Textiltech.*, 1951, 2, No. 2, pp. 78-82. In German. The article describes an apparatus for testing the insulating efficiency of laps of hollow rayon staple, normal rayon staple, and cotton. It consists of an iron tube filled with oil and containing an electric heating element. The heat transfer was calculated from the rise in temperature in the enveloping insulating material, as registered at three minute intervals. Of the three materials, insulating efficiency was highest with hollow rayon, and lowest with cotton. C—5A.

Dacron. L. L. Larson. *Text. World*, 1951, 101, No. 6, pp. 112-113, 312, 314, 316. This article deals briefly with Dacron (formerly Fiber V) with

regard to its appearance, resilience, dimensional stability washability and cleanability, and economy; its use in blends and the consequent dyeing; and its use in knitting yarns, continuous filament yarns, curtains and sewing thread, and in industrial fabrics. C—5A.

Rayon Staple: Is it a Substitute, or the Equal of any other Textile Raw Material? Hans Driesch. *Melliand Textilber.*, 1950, **31**, No. 8, pp 532-536. In German. *Melliand Textilber. (English Edition)*, 1950, **31**, II E., pp. 40-44. In English. The extensive application of rayon staple fibre, even in countries where the more traditional fibres are in abundant supply, indicates that it cannot be considered to be merely a substitute, and that in certain fields it has no equal. Details are given of world production between 1930 and 1949. Manufacturing and test data are given for several types of cloth, specimens of which are included. C—5A.

Raw Cotton: Physical Methods of Test Employed in the U.S.A. J. W. van Dalfsen. *Meded. Vezelinst. T.N.O.*, 1950, No. 100, 34 pages. In Dutch (English summary). The author, who visited the U.S.A. under the E.C.A. scheme, discusses the problem of forecasting yarn properties by analysis of raw cotton, and the possibility of replacing customary cotton-grading methods by instrument grading. He explains the difficulties which will have to be overcome, and gives an account of the extent to which this type of standardization has gained ground in the U.S.A. C—5A.

Shirley Analyser. X. Cauliez. *l'Industrie text.*, 1948, **65**, pp. 299-300. In French. C—5A.

Nylon: Chemical Resistance. E. I. du Pont de Nemours & Co., Inc. *Amer. Dyest. Rep.*, 1951, **40**, No. 10, p. 312. In this reprint from *Nylon Technical Service Bulletin*, 3·01-3·03, "Physical Chemical Properties," lists are given of: (1) materials having no permanent effect on nylon yarn; (2) materials having a permanent effect on nylon yarn; aind (3) swelling agents for nylon yarn. C—5A.

The Electrical Resistance of Textile Materials. Mason Hayek and F. C. Chromey. *Amer. Dyest. Rep.*, 1951, **40**, No. 7, pp. P225-P227. An instrument is described which has been developed for the measurement of the electrical resistance of fibres, fabrics, films and other materials. The instrument is useful over the range 1×10^8 to $400{,}000 \times 10^8$ ohms. Measurements on textile materials permit an evaluation of the tendencies of those materials to accumulate and hold electrostatic charges. Examples of test results are given. C—5A.

Fiber and Spinning Test Results for Some Varieties of Cotton Grown by Selected Cotton Improvement Groups, Crop of 1951. U.S. Department of Agriculture. Washington: U.S. Department of Agriculture, August, 1951, 7 pages. This report gives results for cottons grown in early harvesting areas, principally the Lower Rio Grande Valley of Texas. Colour data for the cleaned lint are included. C—5A.

Identification of Fibres. Erich Herzog. *Deutscher Färberkalender*, 1951, **55**, pp. 147-157. In German. C—5A.

Wool Blends: Quantitative Determination of Nylon, Orlon and Fiber V. Harold W. Wolf. *Amer. Dyest. Rep.*, 1951, **40**, No. 9, pp. 273-276. Three methods for determining nylon, Orlon and Fibre V (Dacron) content in wool blends have been studied, and their accuracy assessed. The sodium hypochlorite method was found to be suitable for the analysis of any blend containing wool and one of the three synthetic fibres. It was the only method which could be applied to a wool and Fibre V blend. The methods can be applied by themselves, or with other procedures, to analyse complex blends. For a visual examination of the uniformity of a blend, and the distribution of fibres in the warp and weft of a fabric, the methods are considered to offer a quick qualitative analysis. C—5A.

Drying and Heating of Textiles. VI. Modifications Produced by Thermal Treatments. J. M. Preston, M. V. Nimkar and S. P. Gundavda. *J. Soc. Dyers Col.*, 1951, **67**, No. 5, pp. 169-176. Changes in the properties of fibres after various thermal treatments have been investigated, and it has been found that the amount of change depends on the moisture content and the temperature of treatment. Swelling, moisture absorption, and dye absorption decrease, whilst density increases, as a result of the thermal treatment. There are twenty-two references. C—5A.

Wool Fibres: Scaliness. A. J. Hall. ("Fibres and Fabrics. Part 9.") *Hosiery Times*, 1951, **24**, (269), 33, 37, 39, 40, 45. The part played by scale structure of the surface of a wool fibre in felting and in shrinkage is discussed. Two theories on felting are outlined which throw doubt on accepting the scale surface of wool fibres as being by itself sufficient to explain the behaviour of wool in felting.
H—**5A.**

Wool Research: Use of Radio-active Tracers. *Hosiery Times*, 1951, **24**, (268), 45-9. Discusses the frictional properties of wool with special reference to the significance, measurement and importance of D.F.E. (directional frictional effect). The *pH* conditions and the fibre movement of wool are also described.
H—**5A.**

(B)—YARNS

Specifications for Wool and Rayon-Staple Slivers: Critical Consideration. G. Nitschke. *Faserforsch. u. Textiltech.*, 1951, **2**, No. 3, pp. 109-119. In German. Existing specifications for wool and rayon staple fibres are surveyed, and additional specifications are suggested as a result of experience gained since control measures were adopted. The present German method of estimating variations in count is considered to be unsatisfactory, and a statistical method is proposed.
C—**5B.**

Stress-Strain Meter for Dynamic Endurance Testing. Walther Wegener. *Melliand Textilber.*, 1950, **31**, No. 10, pp. 668-670. In German. An easily constructed device for recording stress-strain relationships on yarns, *etc.*, is described. It is based on the principle that maximum load decreases with elongation. The apparatus should be useful to rayon manufacturers, spinners, weavers and finishers.
C—**5B.**

Testing Program for the Cotton-Yarn Mill. Dame S. Hamby. *Text. World*, 1951, **101**, No. 5, pp. 99-105. Routine tests for use in cotton spinning mills are described under these headings: fibre tests, picker (scutcher) tests, card tests, drawing tests, roving tests, and yarn tests. A sampling method is discussed for calculating the exact number of samples or tests needed to meet a given set of requirements.
C—**5B.**

Yarn Structure: Note on the Designation. W. E. Morton. *J. Textile Institute*, 1951, **42**, No. 4, pp. S22-S24. The author discusses some of the problems connected with attempts to establish a uniform system for the designation of yarn structure. Difficulties arise in particular when plied and cabled yarns come under consideration, owing to the diversity of "local" systems now in use.
C—**5B.**

Nylon Staple on the Cotton System. F. Millard. *J. Textile Institute*, 1951, **42**, No. 4, pp. T168-T180. This paper gives information about yarns spun on the cotton system from 3 denier, 1½ inch, semi-dull nylon staple fibre. Tables are presented giving figures for count, twist, single thread strength and extension, "skein" (modified lea) strength, and twist liveliness for 26s, 30s, 36s, 40s, 46s, and 52s single yarns. Analysis of the results show that (*a*) the highest commercially-spinnable count is 30s, (*b*) the single thread strength of nylon staple yarn lies between that for American and Egyptian cotton yarns, (*c*) the single thread breaking extension is much higher than that for cotton yarns, and (*d*) in some uses of all-nylon yarn a twist-setting treatment will be needed. Details of the opening, carding, and spinning procedures used, are given in an appendix.* There are seventeen references. (*See also *J. Textile Institute*, 1951, **42**, A590.)
C—**5B.**

Tentative Textile Specification No. 23, 1951. Designation of the Structure of Single, Plied, and Cabled Yarns. Textile Institute. *J. Textile Institute*, 1951, **42**, No. 4, pp. S17-S21. This specification lays down a standard form of designation for yarn counts and yarn structures. Its use is illustrated by some examples. For single yarns, the yarn count (and filament number for continuous filament yarns), direction of twist (S or Z), amount of twist, and (for continuous filament yarns) resultant count are stated in that order. For plied yarn, a second group of symbols denotes the number of yarns plied, the direction of plying twist, and the amount of plying twist; and the resultant count is stated. For cabled yarns there is a similar third group of symbols relating to the number of plied yarns and the cabling twist.
C—**5B.**

Yarn: Quality Control. *Hosiery Times*, 1951, **24**, (268), 55-6, 72. Discusses exhibits at the Electronic Devices Exhibition held in Manchester in July. They included the Fielden Walker Yarn Evenness Tester, the Fielden Mean Deviation

Meter and the I.C.I. Broken Filament Detector and Draw Force Tester. The last uses an electro-magnetic displacement gauge to ascertain the force needed to draft any particular type of fibre. **H—5B.**

(C)—FABRICS

Accelerated Wash Fastness Tests: New Ratings for Vat Dyes on Cotton and Spun Rayon. E. I. du Pont de Nemours & Co. *Du Pont Tech. Bull.*, 1951, 7, No. 1, pp. 30-36. Details are given of a new, more rapid method of evaluating the colour fastness of washable fabrics. One 45-minute operation produces the colour destruction and abrasive action of five average commercial or home launderings. **C—5C.**

Abrasion of Round and Square Samples with the Taber Abraser: Comparative Breakdown. Margaret Harris Zook. *Amer. Dyest. Rep.*, 1950, **39**, No. 25, pp. 895-896. A study was made of the differences which exist when substituting square for round samples in the abrasion test procedure using a Taber abraser. Although no significant difference was observed in the results, square samples are recommended as being more convenient. (See also *J. Textile Institute*, 1951, **42**, A173 and following abstract.) **C—5C.**

Abrasion Testing: Historical Background. Margaret Harris Zook *Amer. Dyest. Rep.*, 1950, **39**, No. 19, pp. 625-627, 630. This article on the historical background of abrasion testing introduces a series of investigations which have as their objectives: (1) the standardization of a test for abrasion of wearing apparel fabrics, using a type of equipment which is readily available, and (2) the establishment of a standard abrasion treatment as a part of an accelerated ageing test for fabrics. (See also *J. Textile Institute*, 1951, **42**, A173 and preceding abstract.) **C—5C.**

Impact Tear-Testing of Textile Materials. Wolfgang Bobeth. *Faserforsch. u. Textiltech.*, 1951, **2**, No. 2, pp. 51-58. In German. The resistance to tear of textile materials increases with an increase in the speed at which the tear is made. The author has investigated impact methods for testing rope, cord, string, and other textiles. A description is given of an experimental apparatus. **C—5C.**

Rayon Shirts: Wear Testing. L. Corbeau, W. Werker and J. Bloem. *Meded. Vezelinst. T.N.O.*, 1949, No. 95, 40 pages (with separate data supplement). In Dutch (English summary). Wear tests were carried out on eight different rayon shirtings—six of rayon staple and two of spun rayon. No instructions were given about laundering, except that the shirts were to be washed every 5-7 days. The mean shrinkage during wear was noted, and is discussed in the report. The two methods of laboratory shrinkage testing applied were: (1) that prescribed by the Vezelinstituut T.N.O. (with minimum mechanical agitation while wet), and (2) the Sanfor washing machine method. As the investigation took place during the war, only a limited number of observations could be made, and the tests were not conclusive, but it is felt that useful information about suitable wear-test techniques has been gained. In the separate supplement, data are presented in the form of tables, graphs and diagrams. **C—5C.**

Undyed Bleached Shirting and Printed Apron Material: Provisional Specifications for Wearing Properties. W. Werker. *Mededel. Vezelinst. T.N.O.*, 1950, No. 102, 30 pages. In Dutch (English summary). Provisional minimum test specifications have been drawn up, for assessing the wearing qualities of shirting and printed apron material. The tests cover fluidity, tensile strength in the weaker direction, warp and weft shrinkage, and absence of harmful impurities or irregularities in the material. For printed apron fabric there are additional tests of resistance to slippage at seams parallel to weft, and fastness to washing and rubbing. **C—5C.**

The Work of the German Fastness Commission. W. Weltzien. *Melliand Textilber.*, 1950, **31**, No. 9, pp. 634-636. In German. **C—5C.**

Finished Fabrics: Tests. ("The Inter-relationship of Functional Fabric Properties Resulting from the Use of Special Textile Finishes.") J. Fred Osterling. *Amer. Dyest. Rep.*, 1951, **40**, No. 11, pp. P346-P349. Fabric characteristics resulting from the application of special textile finishes are analysed. Seven characteristics have been classified as primary, and twenty-five, as secondary. A table gives the relative importance of these characteristics in the case of six groups of military clothing fabrics, and three groups of tentage fabrics. A second

table shows the effect of some special finishing treatments on breaking strength, tear strength and sewability in the case of seven fabrics. C—5C.

Non-Woven Fabrics: Laboratory Evaluation of the Wear Resistance. R. G. Stoll. *Amer. Dyest. Rep.*, 1951, 40, No. 10, pp. 305-311. Basic principles concerning the nature of wear in textile structures (non-woven fabrics, in particular), and its measurement by laboratory techniques are discussed briefly. A new instrument is described for use in the measurement of resistance to flex abrasion and surface abrasion under dry and wet conditions. Results obtained on four bonded fibre webs using the new abrasion tester demonstrate its precision. C—5C.

Static Electricity on Fabrics: Measurement. Mason Hayek and F. C. Chromey. *Amer. Dyest. Rep.*, 1951, 40, No. 5, pp. P164-P168. This paper describes an instrument which has been developed to measure static electricity on fabrics. The instrument can also be used for generating charges on fabrics. The working parts of the instrument are housed in a metal box to permit humidity control. Examples of tests on fabrics treated with anti-static agents and untreated controls illustrate the kind of data obtained with the instrument, and show how the static propensities of the test specimens depend upon the rate of decay of electrostatic charge on the surface, that is, on the surface conductivity. Photographs and diagrams of the instrument are shown. C—5C.

Fiber Properties and Apparent Abrasion Resistance: Relation. D. D. Gagliardi and A. C. Nuessle. *Amer. Dyest. Rep.*, 1951, 40, No. 13, pp. P409-15. A study was made of abrasion resistance of rayon fabrics which had been treated with stabilizing and creaseproofing compounds. Whilst on some accelerated abrasion-testing machines the abrasion resistance was greatly lowered in the treated fabrics, on the Schiefer abrasion machine, at decreasing applied loads, the difference between an original and a modified fabric diminishes until, at some low load, the modified fabric has apparently higher abrasion resistance than the untreated fabric. This is due to the higher elastic recovery of modified fibres. Practical wear results showed the wet abrasion resistance to be greatly increased by the application of stabilizing and creaseproofing compounds to rayon fabrics. The influence of molecular length and flexibility of a cross-linking reagent on abrasion resistance at high loads has been demonstrated. The introduction of short cross-links in cellulose produces the greatest reduction in apparent abrasion resistance because fibre extensibility is greatly reduced. Long and flexible cross-links are more conducive to high retention of abrasion resistance since they yield more flexible and extensible fibres with higher capacity for energy absorption. C—5C.

Mildew-Preventing Activity of Rhodanine Derivatives. Frances C. Brown and Charles K. Bradsher. *Nature*, 1951, 168, 28 July, p. 171. More than a hundred rhodanine derivatives were prepared and tested for their mildew-proofing activity. The majority of the compounds tested were effective in preventing deterioration of cloth in culture tests, while eighteen of the compounds afforded similar protection in a two weeks' soil burial test. Under the same conditions cloth strips impregnated with chloranil lost 80 per cent. or more of their tensile strength. The new mildew-proofing agents contain the structure —N—C—S— present in many plant fungicides, as well as a carbonyl group conjugated with an ethylenic linkage, found in another class of fungicides. C—5C.

The Strip-Tester—An Instrument Designed to Measure Dimensional Change in Woven Rayon Fabrics. Arthur R. Wachter *et al.* *Amer. Dyest. Rep.*, 1951, 40, No. 7, pp. P210-P217. A new instrument, called the "Strip-Tester", has been developed to measure rayon fabric shrinkage. The Strip-Tester is believed to overcome many of the deficiencies of old test methods. It is small, inexpensive to construct, simple and speedy to use, and gives reproducible results. The changes that occur in a fabric under test can be followed by observing the movement of an indicator throughout the wetting and drying operations. A comparison of the results of tests made on eight different fabrics is presented. The fabrics were tested by the Strip-Tester method, various currently used test procedures, and both home and commercial laundering. C—5C.

Half-hose Blends. J. F. Hagen. ("New blends for socks.") *Hosiery Underwear Rev.*, 1951, 34, (9), 136-9. Review of Dynel blends, Orlon blends and Dacron

blends. Results are given of sampling tests, shrinkage, abrasion and warmth tests. H—**5C.**

(D)—OTHER MATERIALS

Accelerated Weathering of Paint and Varnish Films. P. J. Gay. *J. Oil Col. Chem. Ass.*, 1951, **34**, February, pp. 43-87. A brief historical review is given of tests designed to reproduce in accelerated form the features in weather which cause the breakdown of paint films. The limitations and valuable uses of the accepted methods of testing are described. An apparatus has been built which allows some of the more important features, such as intensity and time of ultra-violet light irradiation, amount of water treatment, and period of revolution of the test drum, to be varied. Attempts to increase the rate of polymer degradation in paint by treatment with oxygen at high pressure have given promising results. There are seventy-eight references. C—**5D.**

Abrasion and Wear of Rubber. J. M. Buist. *India-Rubber J.*, 1951, **121**, No. 5, pp. 4, 6. It has been found that wear curves for rubber, obtained on a wide range of laboratory machines, are all of the same family. An empirical equation of the form $y=ax^n$, where y is the time of abrasion, x is the weight loss, volume loss, or thickness decrease, and a and n are constants, fits all the curves obtained. Tables are given in which figures for wear as measured are compared with those calculated by means of the equation. The two sets of figures agree extremely well. C—**5D.**

Atmospheric or Ozone Attack [of Rubber]. Anon. *India-Rubber J.* 1951, **121**, No. 6, pp. 4, 6. This is a short review of the literature. C—**5D.**

Tyres. ("How Research Makes Today's Tyres Better.") J. A. Hoban. *Tire Rev.*, 1950, **50**, No. 11, pp. 32-34 and 76-77 (through *R.A. Brit. Rubber Mfrs, Summary of Current Literature*, 1951, **29**, No. 2, p. 118. Some of the discoveries in rubber research which have contributed to the great reduction in cost of tyres during the past forty years are described. Reference is made to improved synthetic rubber and carbon blacks, butyl rubber inner tubes, the puncture-sealing tubeless tyre, improved tyre cord through the use of rayon and nylon, and compounding to improve age resistance. C—**5D.**

Rubber Hardness Testing: A Practical Manual. A. L. Soden. London: Maclaren, 1951, 49 pages. The series of articles that were the subject of *J. Textile Institute*, 1951, **42**, A326, are here presented in book form. C—**5D.**

Rubber-Textile System in Car Tyres. A. Springer. *Kautschuk u. Gummi*, 1950, **3**, pp. 355-357, 398-401, and 439-442 (through *R.A. Brit. Rubber Mfrs, Summary of Current Literature*, 1951, **29**, No. 2, p. 118. On the basis of flaws found in tyres under stress, an attempt is made to establish the connection between individual physical values and the over-all behaviour of the tyre. Special attention is paid to the physical properties of cord materials and also to the adhesion between rubber and textile fabric, while the physical properties of the rubber are mentioned only to the extent required to understand the reciprocal effect between rubber and fabric. Rayon, cotton, Perlon and nylon are discussed in terms of their reliability as tyre cord materials. The use of polyisocyanates for rendering rubber "tractable" is considered to be a future improvement. It is suggested that tests should be carried out under dynamic conditions and at higher temperatures. Thirty-one references are given. C—**5D.**

Gloss Measurement of Papers—the Effect of Luminance Factor. V. G. W. Harrison and S. R. C. Poulter. *Brit. J. Appl. Phys.*, 1951, **2**, No. 4, pp. 92-97. An equation has been developed to give a measure of visual gloss for a range of papers varying in luminance factor and gloss. The visual gradings of eight papers out of ten are not markedly affected by the conditions of observation, but for the remaining two there is a highly significant shift in grading according to whether these conditions permit formation of mirror image or not. Gloss is considered to be a *gestalt* (or subjective aspect), corresponding to no single physical property of a surface, being judged by appraisal of a physical situation taken as a whole. The validity of the method used in establishing the psychological gloss-scale is checked by experiments in weight grading. C—**5D.**

Standardization of Methods for Testing Textile Auxiliaries in Germany. G. Schwen. *Melliand Textilber.*, 1950, **31**, No. 9, pp. 627-630. In German. This report gives the findings of the Technical Committee of the German Federation of Manufacturers of Textile Auxiliaries, Leather Auxiliaries and Tannin Products

(Surface-Active Agents Sub-Committee). Existing methods of testing are examined in detail. It is considered that the most satisfactory progress has been made in the testing of wetting agents; there is a detailed discussion of the effect of detergents, and also of desizing enzymes. Work on swelling-resistant and water-repellent finishes is also dealt with. It is concluded that the time has not yet come for a comprehensive classification of the composition, efficiency and application of the various textile auxiliaries. C—**5D.**

Testing of Textile Machinery Drive-Belting. H. Mintrop. *Melliand Textilber.*, 1950, **31**, No. 8, pp. 546-548. In German. Statistical research methods should be employed in testing belting. The methods are briefly described. C—**5D.**

Fading Lamps: Design. J. Boulton and J. C. Guthrie. *J. Soc. Dyers Col.*, 1951, **67**, No. 5, pp. 190-192. Some basic considerations in the design of fading lamps are discussed and several features requiring attention in designing a lamp are listed. C—**5D.**

Dyeings: Determination of Strength. I. H. Godlove. *Amer. Dyest. Rep.*, 1951, **40**, No. 14, pp. 429-432. A review of several published works related to practical methods of dye strength determination is presented with general comments. The subjective process of evaluation of brightness and shade is analysed. More objective bases for evaluation of strength directly from instrument measurements, of purity and reflectance for instance, are discussed. Three reasons for adopting these bases in preference to Munsell chroma and Munsell value are cited. A simple method is developed to serve in cases where a spectrophotometer, and especially an automatic integrator, is available. C—**5D.**

Light Fastness Standards (B.S. 1006). Society of Dyers and Colourists. *J. Soc. Dyers Col.*, 1951, **67**, No. 5, pp. 188-190. In order to clarify the position of British light standards, particularly to workers abroad, the history of these standards, as developed by the Fastness Tests Co-ordinating Committee of the Society of Dyers and Colourists, is reviewed. Mention is made of the attempts during 1937-1939 of the German, American, and British Committees concerned with standards to reach a common scale of light standards. This paper has also been published in *Amer. Dyest. Rep.*, 1951, **40**, No. 12, pp. P381-P382; in *Melliand Textilber.*, 1951, **32**, August, pp. 639-640 (in German); in *Text. Rdsch.*, 1951, **6**, No. 5, pp. 227-229 (in German)—previously abstracted (*J. Textile Institute*, 1951, **42**, A505). C—**5D.**

Fade-Ometer: Improvement of Temperature and Humidity [Control]. E. van den Heuvel. *Amer. Dyest. Rep.*, 1951, **40**, No. 13, pp. 397-398. An apparatus is described which can be fitted into any Fade-Ometer, and which permits the determination of light fastness to take place under normal conditions. Moisture-susceptible dyes are found to show correct results when tested in the revised apparatus. C—**5D.**

Dyes: Standardization. George H. Schuler. *Amer. Dyest. Rep.*, 1951, **40**, No. 12, pp. P378-P380. Various aspects of standardization of dyes are briefly presented. The general manner in which standardization is carried out, the great variety of tests used, the degree of accuracy expected in the determination of dyeing strength, and the use of auxiliary testing methods are explained. C—**5D.**

Oils on Jute: Liability to Spontaneous Combustion. A. N. Saha. *J. Textile Institute*, 1951, **42**, No. 5, pp. T207-T210. An investigation has been carried out to determine the effects of the constituents of jute, other than cellulose, on the liability to spontaneous combustion of oils on jute. The method of Mackey (1896) was used, in which the rate of rise of temperature of an oil-soaked sample of fibre when heated in water-jacketed vessel at 100° C., is measured. The rate at which the temperature rises gives an indication of the rate of oxidation. It has been found that the oxidation of oil on jute proceeds at a slower rate than on cotton, and that hemicelluloses in jute function as anti-oxidants. Thus the effect of constituents of the fibre other than cellulose is to decrease the risk of fire due to the spontaneous combustion of the oil. Two tables of results are given. C—**5D.**

Patents

Photo-electric Fibre Length Distribution Testing Instrument. Robertshaw-Fulton Controls Co. B.P.646,608: Appl. and filing 5/5/1948; Publ. 22/11/1950; U.S.A. appl. 2/7/1947. The invention relates to a development of the Hertel

photo-electric cotton stapling instrument that seeks to overcome the difficulty of obtaining the initial adjustment with standard samples. The sample fibre pad is moved across the path of light from a first source and the transmitted light is received by a photo-electric tube, which is also illuminated by a balancing source. The amount of light transmitted through the fibre pad approximates to an exponential function of the fibre distribution, but the light received by the tube is proportional to the inverse square of the distance from the source to the tube. The difference in functions is compensated for automatically by moving the tube with respect to its source of light. The movement is imparted by utilizing a cam surface moved by the motion of the source of light for the tube. The movements of the fibre samples with respect to a photo-tube and the movement of a source of light with respect to the balancing light tube are thus used mechanically to trace a length-distribution curve. The electrical devices and circuit diagrams are shown on six sheets of drawings. C.

Twist Direction Finder [in Running Thread]. American Viscose Corporation, and Charles S. W. Buchanan. U.S.P.2,554,518: Appl. and filing 21/3/1946; Publ. 29/5/1951. C.

Yarn Shed [Abrasion] Testing Machine. Southern Research Institute, Robert J. Taylor, and Robert C. Johnson. U.S.P.2,556,012: Appl. and filing 24/1/1947; Publ. 5/6/1951. C.

Fabric Tensioning Device [for Microscopic Analysis]. Callaway Mills Co., Samuel J. Davis and James J. Colvin. U.S.P.2,556,681: Appl. and filing 11/9/1948; Publ. 12/6/1951. C.

7—LAUNDERING AND DRY-CLEANING

Surface-Active Agents: Addition to Solvents [in Dry-Cleaning]. Oscar Uhl. *Deutscher Färberkalender*, 1951, **55**, pp. 88-96. In German. C—7.

Washing Machines: Efficiency Rating. H. J. Wollner and A. I. Anderson. *Amer. Dyest. Rep.*, 1951, **40**, No. 11, pp. 337-338. Methods which have been developed to gauge the effectiveness of one washing machine in comparison with another in matters of effectiveness of soil removal and production capacity are discussed in a general way. C—7.

Oiled Textile Fibres Immersed in Aqueous Media: A Microscopic Study. D. G. Stevenson. *J. Textile Institute*, 1951, **42**, No. 5, pp. T194-T206. Apparatus for observing and photographing (at about 300 × magnification) the process of removal of oil or other dirt from fibres, is described. The apparatus permits easy control of temperature and pressure, and rapid changing of the liquid surrounding the fibres. The globules described by Powney* as air bubbles, which form at the surface of fibres under adhering oil drops, are shown to be water or aqueous solution; they are formed primarily by osmotic passage of water from the liquid surrounding the fibres, to salt at or near the fibre surface under the oil. Solutions of alkali and certain salts give rise to droplets on salt-free wool fibres. Some observations on the penetration of water into the hollow central tube in some fibres are described, and the possible influence on the detergent action of the formation of water droplets under oil drops is discussed. A large number of photographs are shown. (*See *J. Textile Institute*, 1949, **40**, A526.) C—7.

Detergent: Required Properties. Rudolf Möuch. *Deutscher Färberkalender*, 1951, **55**, pp. 83-88. In German. C—7.

Synthetic Detergents *vs.* Soaps. Anon. *Amer. Dyest. Rep.*, 1945, **34**, No. 18, pp. P351-P353. A discussion on this subject by the members of the Northern New England Section of the American Association of Textile Chemists and Colorists takes the form of a mock court trial. C—7.

Die Wäscherei. W. Kind and H. A. Kind. Stuttgart: Konradin-Verlag, Robert Kohlhammer, 1949, viii+344 pages. In German. This book deals with the materials, machinery, and techniques of work in the laundry. C—7.

Detergents: Literature. Dexter Chemical Corporation. *Hosiery Industry Wkly*, 1951, **60**, (13), 3. A file folder on detergents has been issued containing literature on the evaluation of detergents by chemical analysis, use of builders and sequestering agents and other physical tests. H—7.

8—BUILDING AND ENGINEERING

Chemical Engineering Operations. Frank Rumford. London: Constable, 1951, vii+376 pages. The declared purpose of this book is to provide an introduction to those processes that are peculiar to chemical plant practice. The seventeen chapters deal with the following subjects: chemical works pumping; heat transfer; distillation; gas absorption; extraction; evaporation; drying; mixing; crystallization; liquid filtration; centrifugal practice; gas cleaning; size reduction; screening, classification, and sedimentation; solid separation; measurement; and automatic control. There is a subject index. C—8.

Chemical Engineering, Plant and Machinery. G. Edwards. *Reports of the Progress of Applied Chemistry*, 1949, **34**, pp. 759-800. This is a review of the literature for 1949. There are two hundred and seventy-three references. C—8.

Chemical Engineers' Handbook. John H. Perry (Editor). New York: McGraw Hill, 1950 xv+1,942 pages. The third edition of this encyclopædic work has thirty sections identified by thumb tabs. They deal with the following subjects: mathematical tables and weights and measures; mathematics; physical and chemical data; physical and chemical principles; flow of fluids; heat transmission; evaporation; general theory of diffusional operations; distillation and sublimation: gas absorption; solvent extraction and dialysis; humidification, dehumidification, and cooling towers and spray ponds; drying; adsorption; mechanical separations; size reduction and size enlargement; mixing of material; high-pressure technique; process control; movement and storage of materials; materials of construction; fuels; furnaces and kilns; power generation and mechanical power transmission; refrigeration; plant location; electricity and electrical engineering; electrochemistry; accounting and cost finding; and safety and fire protection. C—8.

(A)—Construction and Maintenance of Buildings and Plant

Design: Good Plant Design Can Cut Finishing Costs. E. C. Gwaltney. *Text. World*, 1951, **101**, No. 6, pp. 143, 145, 188, 190, 192, 193. The author points out that costs can be reduced even before plant is built, by proper plant design and construction. He discusses the requirements of modern plant, the use of the latest materials, and the need to consider long-term upkeep when primary building materials are being chosen. C—8A.

Laminated Gears for Industry. Anon. *Brit. Plastics*, 1951, **24**, June, pp. 206-209. The advantages, for certain purposes, of gears made from phenolic laminate are indicated, and information is given on the production, design and installation of such gears. Several photographs illustrate some of the uses of these gears. C—8A.

Timber as a Flooring Material—Its Relative Resistance to Wear. F. H. Armstrong. *Chem. & Ind.*, 1950, No. 53, December 30th, pp. s854-s858. In order to assess the wearing properties of many new species of timber now being introduced into this country, and their value in flooring, special tests have been devised. Results of the tests indicate the kind, and degree, of wear observed on thirty-three woods. C—8A.

Hot Dip Galvanizing. Anglo-American Council on Productivity. London: Anglo-American Council on Productivity, 1951, xiii+57 pages. This is the *Productivity Report* of a specialist team which visited the United States of America in 1950. C—8A.

Welding. Anglo-American Council on Productivity. London: Anglo-American Council on Productivity, 1951, x+74 pages. This is the *Productivity Report* of a specialist team which visited the United States of America in 1950. C—8A.

(D)—Power Transmission

Cellulose Manufacture. Lansil Ltd. *Elect. Rev.*, 1951, **148**, June 8th, pp. 1219-1221. An illustrated account is given of the preparation of cellulose acetate from cotton linters, for the production of cellulose acetate rayon. The emphasis on on electric motor driving and pumping. C—8D.

Electronic Relays in Textile Factories: Development. Ph.-Claude Coviaux. *l'Industrie text.*, 1948, **65**, pp. 308-310. In French. C—8D.

[Electricity in] Large Wool Mills. I and II. Patons & Baldwins, Ltd. *Elect. Rev.*, 1951, **148**, 6 April, pp. 669-674 and 13 April, pp. 719-723. (I) The various applications of electricity to production processes are described, in the

large new factory which Patons & Baldwins, Ltd. have just completed at Darlington. The factory comprises 35 acres of buildings, is engaged solely on the production of knitting wools, and is designed for an output of approximately 250,000 lb. of yarn a week. The connected power load will be about 20,000 h.p. plus 1,000 kW of lighting, the maximum demand being about 12,000 kVA. Many photographs are included. (II) The electricity, heating, ventilation, and water and process steam services of the factory are described. There are several photographs of electrical equipment. C—**8D.**

Electrical Installation Testing. Anon. *Text. Mfr*, 1951, **77**, April, pp. 164-166. Insulation resistance, the effects of temperature and moisture on it, the testing of insulation, precautions which should be taken in testing, and the location of insulation weaknesses, are dealt with in a simple, practical manner. C—**8D.**

Fault Location in Electrical Installations. Anon. *Text. Mfr*, 1951, **77**, May, pp. 227-229. Elementary information is given on open circuits, earth faults, and short circuits in electrical installations which supply lights and motors. Simple methods of testing for these faults are described. C—**8D.**

Nylon Stockings. Taylor-Woods Ltd. *Elect. Rev.*, 1951, **149**, August 17th, pp. 329-331. This is an illustrated description of the production of nylon stockings in a Northern Ireland factory. The emphasis is on the electrical equipment. C—**8D.**

Textile Mills in Egypt. J. G. Clements and R. V. R. Weston. *Elect. Rev.*, 1951, **149**, August 3rd, pp. 237-240. An illustrated description is given of the overhead electrical power distribution system recently installed by the Société Misr pour la Filature et le Tissage in Egypt. C—**8D.**

Speed Reduction in Power Transmission. P. W. Peel. *Text. Wkly*, 1951, **48**, July 6th, pp. 38, 40, 42. The author defines speed reducers and describes the following types: spur gear units, helical gear units, worm gear units, gear motors (electric motors incorporating a speed reducer), and chain reducers. Eighteen points to be considered in choosing the most suitable speed reduction unit for a particular purpose, are listed. C—**8D.**

(G)—Heating, Ventilation, and Humidification

Air Conditioning in Textile Mills: Useful Notes for Plant Engineers and Executives. Leo Walter. *Indian Text. J.*, 1950, **61**, December, pp. 148-154. Wider use of air conditioning in cotton mills in tropical climates is generally recommended because, firstly, conditioned air reduces "seconds", ensuring a more even product, and secondly, all the benefits derived from better working conditions, and the consequently increased quantity and improved quality of output, repay the initial investment of money on air conditioning. In this survey the writer sets out concisely the elements of design and function of air-conditioning plants, as used in textile mills under various climatic conditions, in order to help the textile engineer to discuss his problems knowledgeably with the specialist, and to judge the value of submitted tenders. There is a short bibliography. C—**8G.**

A Case History of Draftless Air Diffusion in Air Conditioning. W. H. McCaully. *Heat. Vent.*, 1950, **47**, No. 2, pp. 93-4 (through *Building Sci. Abstr.*, 1950, **23**, No. 2, p. 62, abstr. 284). The author describes the air conditioning system which serves parts of a warehouse of 18 acres occupying over 92,000 sq. ft. Draughtless all-the-year-round air conditioning is achieved by means of perforated metal, large-area, low-velocity diffusers, combined with careful zoning with independent controls. The diffuser outlet panels and return grilles are completely concealed behind the perforated-metal acoustic ceiling, and there are wall-mounted, finned radiators under the windows. The total air handled by the 584 outlets is 200,000 cu. ft./min. The exhaust and return air in the general office space is handled by additional panels, installed in the ceiling, which remove air into an exhaust plenum above. The supply and exhaust panels are about 10 ft. apart. About 38 per cent. of the return air is circulated. C—**8G.**

The Economics of Heating in the Textile Industry. Heinrich Stenger *Melliand Textilber.*, 1950, **31**, No. 9, pp. 615-618. In German. Practical hint are given for improved and more economic utilization of coal supplies withou large investments in new equipment. C—**8G.**

Year-round Air Conditioning with the Heat Pump. F. R. Ellenberger. *Gen. Electr. Rev.*, 1950, **53**, No. 12, pp. 10-18. The author outlines the principles of the operation of the heat pump, and deals at greater length with its economic and technical developments. **C—8G.**

Flax Scutching Factories: Air-borne Dust Conditions. K. L. Goodall and P. J. Hardwick. *Brit. J. Ind. Med.*, 1951, **8**, 161-178. A report on dust and health conditions in flax scutching factories during 1943-1945. Surveys were made on dust concentrations in the scutching rooms of six factories, mainly by gravimetric estimations but also by a thermal precipitator method. The over-all average of air-borne dust was 31 mg./m.^{3}; the amount of free silica present was 4·4 per cent. to 12·7 per cent. It is considered that there is a small but probable long term silicosis risk, and a maximum allowable concentration of 10 mg./cu. metre is proposed. The four main sources of dust are de-seeding, scutching, tow machinery, and handling of straw. The median particle size was between 1·5 and 2·6μ. Previous literature on flax dust health hazards is examined. Tables and graphs are given. **L—8G.**

(H)—Water Purification

Water Purification Plant. *Text. Rec.*, 1951, **69**, July, p. 109. This is a description of the water purification plant with a fully automatic control, installed at the Carrickfergus factory of Courtaulds Ltd. **C—8H.**

Water [Purification]. Roy C. Hoather. *Reports on the Progress of Applied Chemistry*, 1949, **34**, pp. 801-809. This is a review of the literature for 1949. There are thirty-one references. **C—8H.**

(I)—Waste Disposal

Sewage, Rivers Pollution and Trade Wastes. L. Klein. *Reports on the Progress of Applied Chemistry*, 1949, **34**, pp. 810-835. This is a review of the literature for 1949. There are one hundred and sixty-four references. **C—8I.**

The Water-Pollution Problem. Lyman Cox. *Amer. Dyest. Rep.*, 1951, **40**, No. 7, pp. P228-P231. The effect of different kinds of pollution on streams is discussed, along with legislation concerning water-pollution in the U.S.A. Ways in which industry can help in pollution abatement are outlined. **C—8I.**

9—SCIENCE

The Biological Degradation of Soluble Cellulose Derivatives and its Relationship to the Mechanism of Cellulose Hydrolysis. E. T. Reese, R. G. H. Siu and H. S. Levinson. *J. Bact.*, **59**, No. 4, pp. 485-497 (through *Rev. Appl. Mycol.*, 1951, **30**, No. 3, p. 115). The authors describe their experiments on thirty organisms, including cellulolytic fungi and bacteria, and non-cellulolytic fungi. They found that the enzyme (Cx), as found in cellulose and its derivatives and as measured by the amount of reducing sugars obtained by hydrolysis of sodium carboxymethyl cellulose (CMC), is produced by most micro-organisms, and at the same rate no matter whether they are cellulolytic or non-cellulolytic. Methyl cellulose (methocel), with the high degree of substitution required for solubility, is usually resistant to microbial attack. CMC and hydroxyethyl cellulose, as they appear on the market, are readily hydrolysed by micro-organisms. **C—9.**

The Dynamics of Cell Expansion by Turgor. F. M. Haines. *Ann. Bot.*, 1951, **15**, April, pp. 219-220. It is pointed out that in dynamic cell-states, when alteration in volume is taking place, the turgor pressure and the wall pressure need not be equal: it is the difference between them which is the cause of the volume change. **C—9.**

Human Immersion and Survival in Cold Water. C. H. Wyndham and D. K. C. MacDonald. *Nature*, 1951, **167**, 21 April, pp. 649-650. The temperature of the superficial tissues and the deep tissues of the human body, and their relation one to the other, were studied during exercise under Arctic conditions. The aim of the investigation was to establish the extent to which exercise can balance heat losses incurred by the human body in cold water, and the eventual effect on manual dexterity (as for instance in clambering on to rafts, *etc.*), on which survival may depend. **C—9.**

Cellulose-Decomposing Fungi: New Species. L. M. Ames. *Mycologia*, 1950, **42**, No. 5, pp. 642-645 (through *Rev. Appl. Mycol.*, 1951, **30**, No. 4, p. 183. Three new species of *Chætomium* are described, green *C. fibripilium* isolated from sugar-cane of the Hawaiian Islands, cream-coloured *C. mollipilium* found on a Japanese raincoat, and the black *C. nigricolor* from India. C—**9.**

Alpha-Cellulose: Digestion by Larvæ of *Anobium punctatum* De Geer. D. Spiller. *Nature*, 1951, **168**, 4 August, pp. 209-210. An attempt was made to determine the amount of α-cellulose in wood which was digested by the larvæ of the common house borer *Anobium punctatum* De Geer, and to discover its significance in the total diet of the pest. C—**9.**

Fungi Growing on Agar: Permanent Preparations. C. L. Duddington and Sylvia M. Dixon. *Nature*, 1951, **168**, 7 July, pp. 38-39. A method is described for the making of preparations from living material. The method, a modification of the chlorazol black method of Armitage (*Trans. Brit. Mycol. Soc.*, 1944, **27**, 131), is said to be excellent for mycelium and thick-walled spores. C—**9.**

Aphid Density: Relationship to Altitude. C. G. Johnson and H. L. Penman. *Nature*, 1951, **168**, 25 August, pp. 337-338. The mean aerial density of aphids was measured simultaneously at different heights above the earth, using traps attached to a barrage balloon cable. C—**9.**

Zinc Requirements of *Aspergillus niger*. G. N. Rolinson. *Nature*, 1951, **168**, 4 August, p. 210. In a study of zinc metabolism in *Aspergillus niger* it was found that zinc is required chiefly for some process involved in the metabolism of glucose or glycerol. C—**9.**

Thrombin: Action in the Clotting of Fibrinogen. K. Bailey, F. R. Bettelheim, L. Lorand and W. R. Middlebrook. *Nature*, 1951, **167**, 10 February, pp. 233-234. Studies on the action of thrombin indicate that thrombin liberates terminal residues of glycine as the fibrinogen clots. No glycine residues were detected in samples of fibrinogen, whereas about five groups per mole of fibrinogen were detected in samples of fibrin. C—**9.**

"Fibrino-Peptide": New Aspects of the Fibrinogen-Fibrin Transformation. L. Lorand. *Nature*, 1951, **167**, 16 June, pp. 992-993. Non-protein nitrogen observed during the clotting of fibrinogen by thrombin has led to the discovery of a peptide, which must be split off from fibrinogen during clotting. Fibrin is thus not the only reaction product of the clotting of fibrinogen. A standard method for the preparation of this fibrino-peptide is promised in a future publication. C—**9.**

Protein Molecules: Biological Significance of Folding and Unfolding. Kurt H. Meyer and H. Mark. *Nature*, 1951, **167**, 5 May, p. 736. The authors draw attention to a paper published by them in 1929, in which they postulated the hypothesis of the folding up of protein chains during muscular contraction. C—**9.**

Ripening Seeds: Biosynthesis of Unsaturated Fatty Acids. T. P. Hilditch. *Nature*, 1951, **167**, 24 February, pp. 298-301. Some features of the biosynthesis of the structurally related unsaturated acids (oleic, linoleic, linolenic and elæostearic) in ripening seeds are considered. There are twenty-seven references. C—**9.**

Amylopectin: Enzymic Scission of the Branch Links. Bunji Maruo and Tsuneo Kobayashi. *Nature*, 1951, **167**, 14 April, pp. 606-607. The mechanism of the action of amylosynthease, an enzyme discovered in 1930 and thought to be a starch-synthesizing enzyme, is examined. The authors believe the enzyme to take part in the formation of amylose from amylopectin, and have renamed it *iso*amylase. It hydrolyses amylopectin-type polysaccharides at the points of Peat is considered to be the same enzyme. C—**9.**

Amylolytic Bacteria. I. A Survey of Named Mesophilic Species on Soluble Starch. Egon Stark and P. A. Tetrault. *Canad. J. Bot.*, 1951, **29**, April, pp. 91-103. Details are given of a survey made to determine the ability of known, named mesophilic strains of forty bacterial species to hydrolyse soluble starch in trypticase (yeast extract broth). The forty species are either not described in Bergey's Manual as to their action on starch, or they are listed as "not hydrolysing starch". Strains of thirty-five species hydrolysed soluble starch, including seven species described as non-amylolytic. It was found that the disappearance of the substrate is a more permanent characteristic

than the accumulation of either acids or reducing sugars. Additional tests are required when the starch-iodine colour is still blue after two weeks of incubation. The initial *pH* seems to influence amylase formation. There are forty-five references. C—9.

Amylolytic Bacteria. II. A Survey of Named Mesophilic Species on Five Different Starches. Egon Stark and P. A. Tetrault. *Canad. J. Bot.*, 1951, **29**, April, pp. 104-112. This is a detailed report on a study of the ability of strains of forty mesophilic species of bacteria to hydrolyse potato, corn, rice, arrowroot, and soluble starches. The forty species are either not described in Bergey's Manual as to their action on starch, or they are listed as "not hydrolysing starch". Strains of thirty-two species were amylolytic, six species were not; strains of two species failed to grow. Of the thirty-two amylolytic species, twenty-two attacked all five starches, two attacked four, six hydrolysed two, and two attacked only one starch. No starch was hydrolysed by all the thirty-two species. Rice and soluble starch were most readily hydrolysed. Potato and corn starch offered the greatest resistance at first. Arrowroot starch held an intermediate position. Two weeks of incubation seemed a minimum period; the longer the cultures were incubated, the more completely was a particular starch hydrolysed, and the more numerous were the amylolytic cultures. The implications of these observations for determinative work are discussed. There are nine references. C—9.

Amino Acids: Some Aspects of the Microbiological Assay. E. C. Barton-Wright. *Chem. & Ind.*, 1950, No. 53, December 30th, pp. s845-s848. Recent progress in the microbiological assay of amino acids is briefly reviewed. It is said to be possible to estimate some sixteen of the known amino acids by using three lactic organisms. The medium is composed of the amino acids necessary for the growth of the bacteria, with the acid to be assayed omitted. It is buffered to the optimum *pH* for the growth of the bacteria. The exact composition of the medium for the assay of several amino acids is given. A method of computation is also given. There are twelve references. C—9.

Barley, Malt and Wort Gums: Some Characteristics. W. O. S. Meredith, E. J. Bass and J. A. Anderson. *Cereal Chem.*, 1951, **28**, May, pp. 177-188. Gum-like polysaccharides were isolated from barley, malt and wort, and used in comparative experiments. The principal sugars in all gums were found to be glucose, arabinose and xylose, but traces of galacturonic acid, galactose and mannose were also present, proving that the gums are related to the arabo-xylo-glucosans and galacto-mannons. The 3 to 3·5 per cent. nitrogen in the gums is completely removed by alkali treatment. C—9.

Carbon and Nitrogen Sources for the Production of Amylolytic Enzymes by Submerged Culture of Aspergillus niger. P. Shu and A. C. Blackwood. *Canad. J. Bot.*, 1951, **29**, April, pp. 113-124. The culture of *Aspergillus niger*, used for the production of starch-saccharifying enzymes, was grown in Erlenmeyer flasks agitated and aerated on a rotary shaker at 35° C. Quantitative analyses for amylase, maltase and limit dextrinase were determined on the culture filtrates. Variations in the specific type of carbohydrate source affected the yield of amylase markedly, and of maltase to a lesser extent; the production of limit dextrinase is the least dependent on the carbohydrate source. Maltose or its compounds are essential for producing a maximum yield of amylase. Enzyme yields are related to the availability of the nitrogen source, and the highest enzyme yields are obtained with hydrolysed protein; however, the production of amylase and maltase is further stimulated by adding inorganic nitrogen compounds, such as ammonium nitrate and sodium nitrate, as a supplementary nitrogen source. The amounts of maltase and amylase obtained are also controlled by varying the fermentation time as well as the carbohydrate and protein content of the medium. There are twenty-eight references. C—9.

Alpha Amylases: Action. Mary L. Caldwell and Mildred Adams. *Advances in Carbohydrate Chemistry*, 1950, **5**, pp. 229-268. This is a critical review of the subject, with one hundred and twelve references to the literature. It deals mainly with the amylase of malted barley, pancreatic amylase, and the amylase of *Aspergillus oryzae*. C—9.

Biochemistry: Annual Review. J. Murray Luck (Editor). Stanford (California): Annual Reviews, 1950, **19**, x + 596 pages. The nineteenth volume of this annual

review contains surveys of the literature for 1949 on the following subjects: biological oxidations; proteolytic enzymes*; non-oxidative, nonproteolytic enzymes*; carbohydrate chemistry*; chemistry of lipids; chemistry and metabolism of the steroid hormones; chemistry of amino acids and proteins*; nucleic acids, purines, and pyrimidines; carbohydrate metabolism; fat metabolism; metabolism of proteins and amino acids; chemistry of the hormones; water-soluble vitamins; fat-soluble vitamins; nutrition; muscle; biochemistry of neoplastic tissue; chemical composition of blood plasma and serum; pyrrole pigments; immunochemistry; biochemistry of antibiotics; and partition chromatography*. * Abstracted in this issue. C—9.

Chemical Constitution and Biological Activity. W. A. Sexton. London: Spon, 1949, xxi+412 pages. This monograph is concerned particularly with the literature of the last twenty years. The first part deals with fundamentals, and includes a chapter on macromolecules. The second part deals with particular topics, and includes chapters on bactericides and fungicides, insecticides, plant growth regulators, and antigens and antibodies. C—9.

The Enzymes Volume II, Part 1. James B. Sumner and Karl Myrbäck (Editors). New York: Academic Press, 1951, xi+790 pages. This work is to be completed in two volumes: Volume I, Parts 1 and 2; Volume II, Parts 1 and 2. The present part has chapters, by different authors, on theory of oxidation-reduction; thermodynamics and mechanism of the phosphate bond; transphosphorylating enzymes of fermentation; dephosphorylation of adenosine polyphosphates; aldolase and isomerase; keto acid decarboxylases; amino acid decarboxylases; desulphinase; codehydrogenases I and II, and apoenzymes; succinic dehydrogenase; hydrogenase and hydrogenylase; flavin-containing enzymes; the iron-containing enzymes; copper oxidases; oxidation of amino acids; oxidation of amines; lipoxidase or unsaturated fat oxidase; enzymes in luminescence; anaerobic glycolysis, respiration, and the Pasteur effect; and yeast and mould fermentations. C—9.

Nonoxidative, Nonproteolytic Enzymes. P. P. Cohen and R. W. McGilvery. *Annual Review of Biochemistry*, 1950, 19, pp. 43-66. This is a review of the literature for the period November 1948 to October 1949. There are two hundred and thirteen references. C—9.

Enzyme Specificity in the Domain of Carbohydrates: Principles Underlying. Alfred Gottschalk. *Advances in Carbohydrate Chemistry*, 1950, 5, pp. 49-78. This is a critical review of the subject, with seventy-two references to the literature. C—9.

Proteolytic Enzymes. M. Laskowski. *Annual Review of Biochemistry*, 1950, 19, pp. 21-42. This is a review of the literature for 1949. There are two hundred and one references. C—9.

Amino Acid Analysis. G. R. Tristram. *Chem. & Ind.*, 1950, No. 53, December 30th, pp. s868-s873. Modern methods of amino acid analysis are briefly described under the following headings: (1) total protein-N, (2) moisture content, (3) estimation of the hydroxyamino acids serine and threonine, (4) electrodialysis of the basic amino acids, (5) enzymatic methods, (6) isotope dilution, (7) radioactive isotope swamping, (8) starch chromatography, (9) the sulphur-containing acids, (10) the determination of cysteine in the intact protein, (11) dicarboxylic acids, (12) colorimetric techniques, and (13) end-group analysis. There is a discussion of the limits imposed upon the interpretation of analytical data by the degree of accuracy of the method used. The approximate accuracy of most modern methods is said to be about 3 per cent. The percentage accuracy required in amino-acid analysis, when estimating the number of residues in a protein (sub) molecule, has been evaluated for different numbers of residues. The number of residues cannot be accurately ascertained by methods giving 3 per cent. accuracy unless the residues number less than sixteen. There are twenty-five references. C—9.

An Apparatus for Use in Connexion with the Sulphuric Acid Digestion of Protein-Containing Material. A. John G. Barnett and Thomas B. Miller. *Chem. & Ind.*, 1951, No. 13, p. 246. An apparatus is described which is suitable for use when macro-Kjeldahl digestions are performed in a laboratory lacking a fume cupboard. C—9.

An Automatic Chromatogram Fraction Cutter. J. O. Harris. *Chem. & Ind.*, 1951, No. 13, p. 255. An apparatus, said to be simple, cheap and robust, has been designed for the collection of fractions of equal volume from a liquid chromatographic column. C—9.

Bottle-Shaking Mechanism. O. Kantorowicz. *J. Sci. Instrum.*, 1951, **28**, No. 2, p. 61. A bottle-shaking mechanism, originally designed for a Kjeldahl apparatus, is illustrated with diagrams and a photograph. C—9.

Chromatographic and Chemical Identification of a Fluorescent Substance in the Larva of Bombyx Mori Affected by Obesity. Mme. Andrée Drilhon. *C.R. Acad. Sci.*, 1951, **232**, No. 20, pp. 1876-1878. In French. Silk worms suffering from obesity contain a highly yellow-fluorescent substance in the blood and in the Malpighian tubes. This substance has been easily isolated chromatographically with consistent results at the following R_F values: 0·20 in ammoniacal phenol; 0·17 in Partridge mixture; 0·08 in a benzyl-alcohol/butyl-alcohol mixture. The fluorescence appears to have characteristics in common with that of silk. Chromatography has, in fact, indicated that cocoons from different species of silk worm all contain yellow-fluorescent, violet-fluorescent and bright green substances. Physical and chemical properties indicate the yellow substance to be a tetraoxyflavone. C—9.

The Detection of Acids on Paper Partition Chromatograms. D. Neville Gore. *Chem. & Ind.*, 1951, No. 25, p. 479. In the procedure described, the solvent-free paper is sprayed with a 1 per cent. dextrose solution, dried, and then sprayed with an ammoniacal silver nitrate solution. After heating to develop the background, areas occupied by acid show up as white "spots". C—9.

Early History of Chromatography. Herbert Weil and Trevor I. Williams. *Nature*, 1950, **166**, December 6th, pp. 1000-1001 and 1951, **167**, June 2nd, pp. 906-907. L. Zechmeister. *Ibid*, 1951, **167**, March 10th, pp. 405-406. In this correspondence, the authors engage in a controversy as to which investigators should be credited with the discovery of chromatography. C—9.

Paper Chromatography of Proteins. S. C. Papastamatis and J. F. Wilkinson. *Nature*, 1951, **167**, 5 May, pp. 724-725. A simple chromatographic technique which detects as little as 20 μg. of protein is described. The method is based on the "protein-error" of indicators—the phenomenon in which protein interferes with the normal *pH* colour-change of the adsorbed indicator. C—9.

A Proportional Balance for Routine Analysis. C. F. M. Fryd. *Chem. & Ind.*, 1951, No. 19, pp. 362-363. Details are given of the construction of a direct reading balance for routine analysis, which does not require the use of weights. It was designed to determine the proportion of cigarette paper in cigarette samples. C—9.

Quantitative Microdetermination of Amino Acids after Paper Chromatography. A. Pereira and J. A. Serra. *Science*, 1951, **113**, 6 April, pp. 387-388. A paper chromatographic method is described for the determination of quantities of amino acids of about 10γ. The method, which is said to be reproducible to within an error of 3-5 per cent., involves cutting the spots from the paper and measuring the colour intensity developed by a ninhydrin solution. If the amount of the amino acid is below the quantitative limit, a known quantity of the amino acid is added to the paper spot with a fine capillary pipette. The ninhydrin colour test is then applied. C—9.

Quantitative Separation of Small Amounts of Zinc from Other Metals by Chromatography on Cellulose Columns. J. R. Bishop and H. Liebmann. *Nature*, 1951, **167**, 31 March, p. 524. The authors describe the separation of zinc from nine other metals using paper strips according to the method of Burstall *et al.* (See *J. Textile Institute*, 1950, **41**, A375.) Separation of zinc was also obtained on cellulose columns. C—9.

Quantitative Spectrochemical Analysis by Means of the Direct Carbon Arc. Part I. General Methods. Part II. Biological Materials. N. H. W. Addink. *Rec. Trav. Chim.*, 1951, **70**, No. 2, pp. 155-157 and 168-181. In English. (I) A general method of complete evaporation, by means of the direct current carbon arc, has been worked out. The method has been successfully applied for over two years; during this time 2,500 analyses were carried out, and 30 per cent. of these yielded quantitative results. Difficulties encountered in the method include spluttering, and decreasing or increasing rate of evaporation. The method of

successive addition has proved to be of importance in the determination of the exponent n in the equation: $i = k.c^n$, where i is the intensity of the spectrum line, k and n are constants, and c is the concentration of the element to be analysed. Some values of n are listed. The method of successive addition can be used in determining element concentrations without chemical analysis; successive amounts of the element are added to the material under consideration, and the line intensities of the mixtures so prepared are measured. (II) This part deals with the application of the method to biological materials; a possible correlation between the zinc content of liver and blood, and the cancer problem, is discussed at length. C—9.

Separation of Amino Acids as Dinitrophenyl Derivatives. J. C. Perrone. *Nature*, 1951, **167**, 31 March, pp. 513-514. A method is described for the separation of 2:4-dinitrophenyl amino acids on a buffered "Celite 545" column. These 2:4-dinitrophenyl amino acids can be further separated into three groups by using ether columns buffered at different *pH*'s. Chloroform columns are found useful in the purification of individual bands obtained from the ether columns. A method is described for the isolation of the glycine from protein hydrolysates. A "Celite 545" buffered column is used with a chloroform-ether solution as solvent. C—9.

Thiosemicarbazide as a Reagent for the Identification of Aldehydes, Ketones and Quinones. Peter P. T. Sah and T. C. Daniels. *Rec. Trav. Chim.*, 1950, **69**, No. 12, pp. 1545-1556. In English. A large number of thiosemicarbazones have been prepared for their evalution as characteristic derivatives for the identification of carbonyl compounds. The value of thiosemicarbazide as a reagent in qualitative organic analysis is discussed. C—9.

The "Volatile Copper Compound" and its Effect on the Beilstein Test. A. Keller. *Nature*, 1951, **167**, 2 June. pp. 907-908. The "volatile copper compound" previously reported (*Nature*, 1948, **162**, p. 580) is considered from recent findings to consist of the unstable subliming cuprous salts of fatty acids. In view of this, the Beilstein test for detecting halogens in organic substances should be revised. Positive Beilstein tests are obtained when no halogens are present and this erroneous result may well be attributed to the formation of such volatile copper compounds. C—9.

Buffered Solvent Systems: Application to the Detection of Aromatic Acids by Paper Partition Chromatography. Mona E. Fewster and David A. Hall. *Nature*, 1951, **168**, 14 July, pp. 78-79. A sensitive qualitative chromatographic technique is reported for the separation of aromatic acid intermediates which are formed during the metabolism of phenylalanine in bacterial cultures. C—9.

Colorimetric Methods of Analysis. Volume II, Inorganic. Foster D. Snell and Cornelia T. Snell. New York: Van Nostrand, 1949, x+950 pages. This is the third edition of a book which is intended to supply the worker in colorimetry with a selected collection of available methods. The sixty-eight chapters relate to lead, thallium, silver, mercury, copper, cadmium, bismuth, arsenic, antimony, tin, indium, gallium, germanium, aluminium, beryllium, chromium, iron, nickel, cobalt, manganese, zinc, titanium, zirconium, vanadium, tungsten, molybdenum, uranium, columbium, tantalum, gold, platinum, rhodium, iridium, palladium, osmium, rhenium, potassium, sodium, lithium, caesium, calcium, barium, cerium, lanthanum, magnesium, phosphorus, silica, boron, chlorine and chloramine, chloride, chlorates and perchlorates, bromide, iodine and iodine compounds, fluoride, sulphide, sulphur in various oxidised forms, selenium and tellurium, thiocyanates, nitrate, nitrite, ammonia, carbon, carbon monoxide, carbon dioxide and carbonates, cyanide, oxygen peroxides, and ozones. There is an author index, and a subject index. C—9.

A Colorimetric Method for the Determination of Sugars. M. Dubois, K. Gilles, J. K. Hamilton, P. A. Rebers and F. Smith. *Nature*, 1951, **168**, 28 July, p. 167. Phenol in the presence of sulphuric acid is found to provide a simple rapid method for the quantitative colorimetric determination of ketoses and aldoses, and their methyl derivatives, on a sub-micro scale. The method is found to be particularly useful for the determination of sugars which have been separated by partition chromatography. C—9.

Amino Acid Chromatograms: Conservation. E. Kawerau and T. Wieland. *Nature*, 1951, **168**, 14 July, pp. 77-78. A method is reported for making much

more stable the blue pigment which is formed when the ninhydrin reaction is used for identifying amino acids in filter-paper partition chromatography. The blue pigment was coupled with a metal, and its colour was determined with different metals and different amino acids. The new pigment did not fade after being in front of a window for one month, while the blue pigment faded completely in this time. C—9.

Amino Acids, Peptides, Proteins and other Buffering Substances on Paper: A New Method for Detection. J. Porath and P. Flodin. *Nature*, 1951, **168**, 4 August, pp. 202-203. A new method for the detection of amino acids in paper chromatograms is described. The paper around the spots is treated in such a way as to develop a strong colour; the buffering power of the amino acids protects the paper from this action where the spots occur, and the spots appear white against a coloured background. Amino acids were detected in amounts as small as 0·1γ. C—9.

Amino Acids: A New Paper Chromatography Solvent for. F. Bryant and B. T. Overell. *Nature*, 1951, **168**, 28 July, pp. 167-168. Mesityl oxide, used as a solvent in two-dimensional paper chromatography of amino acids, is found to give an extremely wide distribution of R_F values. C—9.

Partition Chromatography. A. J. P. Martin. *Annual Review of Biochemistry*, 1950, **19**, pp. 517-542. This is a review of the literature for 1949. There are two hundred and seventy-seven references. C—9.

Adsorption Chromatography: A Simplified Coupled Filter System for. David A. Hall. *Nature*, 1951, **168**, 21 July, p. 124. A simplified column for use in adsorption chromatography has been designed. It is made of Perspex and is considered to have several advantages over the original apparatus of Hagdahl. C—9.

Enzyme Chromatography. L. Zechmeister and M. Rohdewald. *Fortschritte der Chemie organische Naturstoffe*, 1951, **8**, pp. 341-364. In English. This is a review with one hundred and eleven references. C—9.

Calcium Carbonate and Its Hydrates. R. Brooks, L. M. Clark and E. F. Thurston. *Phil. Trans. Roy. Soc. London*, 1950, **A**, **243**, No. 861, pp. 145-167. This paper is concerned with observations on the preparation of phases which may exist in the system $CaCO_3 - H_2O$ in the presence of "additives", with a qualitative explanation of the appearance of unstable phases under such conditions. The tendency for metastable phases of calcium carbonate to be precipitated from aqueous solutions has been investigated. The following factors were studied: rate of precipitation, stirring, temperature, and the concentration of additives such as Calgon (a commercial sodium phosphate) or magnesium-ion. By varying the conditions of precipitation, particularly stirring and temperature, a range of products was obtained, namely, calcite (the stable phase), aragonite, vaterite, calcium carbonate hexahydrate, and a new hydrate, $CaCO_3.H_2O$. Metastable phase diagrams have been constructed to show the dependence of the phases on conditions of precipitation. Nucleation has also been studied and X-ray examination has been used to aid this. Evidence seems to indicate that absorption of additive is important in influencing nucleation and the formation of metastable phases. There are thirty-three references. C—9.

Electrolytic Corrosion of Metals. A. E. Durkin. *Gen. Electr. Rev.*, 1951, **54**, No. 2, pp. 45-48. The electromotive series is given as a guide in choosing materials that will not give rise to electrolytic corrosion when installed as parts in a machine. The mechanism of electrolytic corrosion is discussed in simple terms. C—9.

Length of the Period of the Periodic System. M. V. Tomkeieff. *Nature*, 1951, **167**, 9 June, p. 954. On the assumption that each period in the periodic system ends in a rare gas, a formula has been devised to give the number of elements in a period. The formula also gives the relation between the number of electron shells in an atom, and the number of the elements in the period in which the particular atom is placed. C—9.

The Removal of Enamel from Copper Wire. T. P. Gill and M. L. Hume. *J. Sci. Instrum.*, 1951, **28**, No. 2, pp. 60-61. A method using chloracetyl chloride for the removal of enamel from Litz and other copper wire is given. C—9.

Applied Chemistry: Reports on Progress. Society of Chemical Industry. London: Society of Chemical Industry, 1949, **34**, 928 pages. This volume contains review articles on the following subjects: fuel; gas and destructive distillation; tar and tar products; mineral oils; iron and steel; non-ferrous metals; electrochemical and electrometallurgical industries; acids, alkalis and salts; ceramics, refractories and cements; glass; intermediates and colouring matters*; fine chemicals and colouring matters; photographic materials and processes; fats, fatty oils and detergents*; cosmetics and toilet preparations; plastics*; resins, drying oils, varnishes and paints*; rubber*; pulp and paper; cellulose textile chemistry*; the protein fibres*; leather and glue; agriculture and horticulture; control of pest infestation; essential oils, isolates and derivates; sugar; the fermentation industries; antibiotics; chemical engineering, plant and machinery*; water*; and sewage, rivers pollution and trade wastes*. *Abstracted in this issue. **C—9.**

Chlorine. Anon. *Chem. Engng News*, 1951, **29**, No. 5, pp. 364-369. This report on the chlorine industry in the U.S.A. describes the great need for more production—chlorine consumption has doubled in the past decade—the various methods of production and their efficiency, and methods of distribution. **C—9.**

The Acylation of Corn Starch, Amylose and Amylopectin. Ivan A. Wolff, David W. Olds and G. E. Hilbert. *J. Amer. Chem. Soc.*, 1951, **73**, No. 1, pp. 346-349. Techniques are described for the preparation of whole-corn starch, amylose and amylopectin triacetate, tripropionate, tributyrate, tricaproate, tripalmitate, and tribenzoate. Solubilities of the esters in a number of organic solvents were qualitatively determined, and shown to be dependent on the method used for pretreating the polysaccharide prior to its esterification. The optical rotations of the triesters of amylose were found to be higher than those of whole starch and amylopectin. The molecular rotations of the various aliphatic acid esters of the polysaccharides were approximately constant. **C—9.**

Alginic Acid and the Alginates. Raoul Richard. *Chim. Ind.*, 1951, **65**, No. 6, pp. 793-800. In French. The author discusses the properties of alginic acid and the alginates, and comments on the resemblance between their structure, and the structures of pectic acid and cellulose. Chemical, physical and rheological properties are listed, and mention is made of the effect of *pH* on the viscosity of solutions. The properties of various metallic alginates are briefly reviewed. **C—9.**

Arylamine-N-Glycosides. G. P. Ellis and John Honeyman. *Nature*, 1951, **167**, 10 February, pp. 239-240. The preparation, properties and derivatives of arylamine-N-glycosides are discussed. **C—9.**

Pectins: Chemical Composition and Properties. J. K. N. Jones. *Chem. & Ind.*, 1951, No. 23, pp. 430-431. **C—9.**

Antioxidants: Effects on Rate of Breakdown of Rubber During Mastication. F. H. Cotton and K. O. Lee. *India-Rubber J.*, 1951, **120**, No. 21, pp. 9-10. Experiments are briefly described and results are given. **C—9.**

Glycogen and Starch from the Seed of Sweet Corn: Molecular Constitution. (*Zea Mays*). W. Z. Hassid and R. M. McCready. *J. Amer. Chem. Soc.*, 1941, **63**, No. 6, pp. 1632-1635. Investigations were made on the molecular structure of (1) a polysaccharide, apparently similar to glycogen, and (2) a starch, both simultaneous isolated from *Zea mays*. **C—9.**

Urea and Formaldehyde: Note on the Reaction. J. I. de Jong. *Rec. Trav. Chim.*, 1950, **69**, No. 12, p. 1566. In English. Hitherto, studies of the urea-formaldehyde reaction have indicated a sharp decrease in *pH*, and a very rapid initial reaction, when a neutral aqueous solution of formaldehyde and a weakly alkaline solution of urea were used. It had not been possible to find a bimolecular reaction constant. It has recently been observed, however, that when freshly prepared solutions of repeatedly crystallized urea and neutral formalin were used, neither a fall in *pH* nor an initial reaction took place. The indications are that the reaction is bimolecular from the beginning, and that the presence of small amounts of ammonium salts is probably responsible for the previously observed behaviour. **C—9.**

Formic Acid and Its Salts: Reactions. Paul Haas. *Nature*, 1951, **167**, 24 February, p. 325. The author disputes the view, expressed in most textbooks of organic chemistry, that formic acid and formates owe their reducing character

to the presence of an aldehyde group in their molecule. Formates give none of the usual reactions which characterize an aldehyde. It appears likely that the reduction of silver nitrate or mercuric chloride, instead of being an aldehyde reaction, is due, rather, to the breakdown of silver or mercury formates produced by double decomposition. The ease with which formic acid parts with its two hydrogen atoms may account for its reduction of oxidizing agents. C—**9.**

Phenolic Resins: Recent Progress in Chemistry. S. R. Finn, J. L. Megson and E. J. W. Whittaker. *Chem. & Ind.*, 1950, No. 53, December 30th, pp. s849-s853. This paper summarizes the results of investigations undertaken in support of various theoretical considerations which were advanced about the fine structure of phenolic resins in a previous paper (*J. Soc. Chem. Ind.*, 1948, **67**, 155). The main lines of work described are: (*a*) Fine structures of crystalline compounds by X-ray crystallography, (*b*) preparation of resins of phenol-ethane chain type, (*c*) synthesis and characterization of new compounds (trinuclear derivative from *p*-cresol, methylol derivatives of 3:5 dimethylphenol, mesitol-formaldehyde condensation products, 3:4 dimethylphenol-formaldehyde condensation products and new polynuclear compounds), (*d*) mixing of isomeric dihydroxydiphenylmethanes, and (*e*) effect of *pH* on yields of intermediates. C—**9.**

Steroid Nomenclature. CIBA Foundation. *Chem. & Ind.*, 1951, No. 25, pp. SN 1-11. This supplement gives the list of rules relating to steroid nomenclature that was drawn up by an independent international body of chemists at a conference held at the CIBA Foundation, London, on May 30th to June 1st, 1950. C—**9.**

Acetylene. Anon. *Chem. Engng News*, 1950, **28**, No. 49, pp. 4244-4247. Acetylene production in the U.S.A. is discussed in terms of its most economical manufacture, the geographical areas in which the biggest demands occur, and the uses to which it is put. The demand for acetylene has been greatly increased recently, due to its part in the manufacture of acrylonitrile, polyvinyl plastics and synthetic aliphatic derivatives. A thermal cracking method of production from natural gas may supplant the traditional calcium carbide process. C—**9.**

Carbohydrate Chemistry: Advances. Claude S. Hudson and Sidney M. Cantor (Editors). New York: Academic Press, 1950, **5**, xi+322 pages. The fifth volume of this series contains articles on the following subjects: applications in the carbohydrate field of reductive desulphurization by Raney nickel, enzymatic synthesis of sucrose and other disaccharides, principles underlying enzyme specificity in the domain of carbohydrates*, enzymes acting on pectic substances, the relative crystallinity of celluloses*, the commercial production of crystalline dextrose, the methyl ethers of D-glucose, anhydrides of the pentitols and hexitols, action of certain alpha amylases*, and xylan. * Abstracted in this issue. C—**9.**

Carbohydrate Chemistry. M. L. Wolfrom and J. M. Sugihara. *Annual Review of Biochemistry*, 1950, **19**, pp. 67-88. This is a review of the literature for the period from October 1948 to November 1949. There are three hundred and twenty-eight references. C—**9.**

Amino Acids and Proteins: Chemistry. R. Keith Cannan and Milton Levy. *Annual Review of Biochemistry*, 1950, **19**, pp. 125-148. This is a review of the literature for 1949. There are two hundred and forty references. C—**9.**

Cellulose Textile Chemistry. H. A. Turner. *Reports on the Progress of Applied Chemistry*, 1949, **34**, pp. 524-561. This is a review of the literature for 1949. There are three hundred and twelve references. C—**9.**

Formic Acid: Decomposition by Periodate. P. B. Sarkar. *Nature*, 1951, **168**, 21 July, pp. 122-123. Investigations were made to see if formic acid liberated from the reaction of potassium periodate on a polysaccharide was itself attacked by the periodate. It was found that in N/500, or weaker, solutions, formic acid is unaffected by periodate. The presence of potassium periodate was found to prevent the liberation of iodine formed when potassium iodate was reduced by formic acid. C—**9.**

Fats, Fatty Oils and Detergents. N. D. Sylvester. *Reports on the Progress of Applied Chemistry*, 1949, **34**, pp. 372-392. This is a review of the literature for 1949. There are one hundred and three references. C—**9.**

Fortschritte der Chemie organischer Naturstoffe. VIII. L. Zechmeister (Editor). Wien: Springer-Verlag, 1951, xi+400 pages. The eighth volume of

this work on Progress in the Chemistry of Organic Natural Products contains articles on the fine structure of cellulose*, bacterial dextrans, sugar phosphates*, the chemistry of nucleotides, orris-root perfumes, lichens, lupin-alkaloids, ipecacuanha-alkaloids, X-ray diffraction studies of crystalline amino acids and peptides*, and some aspects of enzyme chromatography*. * Abstracted in this issue. C—9.

Plastics. J. W. C. Crawford, A. A. K. Whitehouse, and T. N. Parkin. *Reports on the Progress of Applied Chemistry*, 1949, **34**, pp. 399-455. This review of the literature for 1949 is divided into three parts: (1) Polymerisation Products, which has one hundred and twenty-six references; (2) Polycondensation Products, which has one hundred and sixty-one references; and (3) Plastics from Natural Polymers, which has one hundred and forty references. C—9.

The Protein Fibres. G. K. Simpson. *Reports on the Progress of Applied Chemistry*, 1949, **34**, pp. 562-583. This is a review of the literature for 1949. There are one hundred and forty-two references. C—9.

Resins, Drying Oils, Varnishes and Paints. R. S. Robinson, J. H. Greaves, L. J. Brooks, and H. L. Howard. *Reports on the Progress of Applied Chemistry*, 1949, **34**, pp. 456-483. This review of the literature for 1949 is divided into five parts: (1) Natural and Synthetic Resins, which has sixty-four references, (2) Drying Oils, Driers and Varnishes, which has fifty-seven references; (3) Paints and Pigments, which has thirty-six references; (4) Cellulose Ester and Ether Lacquers, which has twenty-nine references; and (5) Solvents, which has twenty-seven references. C—9.

Rubber. S. A. Brazier. *Reports on the Progress of Applied Chemistry*, 1949, **34**, pp. 484-508. This is a review of the literature for 1949. There are one hundred and ninety-four references. C—9.

Sugar Phosphates. L. F. Leloir. *Fortschritte der Chemie organischer Naturstoffe*, 1951, **8**, pp. 47-95. In English. This is a review of the literature. There are one hundred and eighty-nine references. C—9.

Bound Water in the System Cellulose-Aqueous Salt Solution. J. Farrar, S. M. Neale and G. R. Williamson. *Nature*, 1951, **167**, 31 March, p. 524. The authors argue that the use of specific volume measurements for the determination of "bound water" in cellulose is invalid; measurements made with a particular solute are devoid of general significance. C—9.

Configurational Notation of the Tartaric Acids. C. Buchanan. *Nature*, 1951, **167**, 28 April, pp. 689-690. The correct use of the configuration symbols (+) and (−) and D- and L- is discussed for the tartaric acids. [In a note added in proof, it is disclosed that Cahn and Ingold (*J. Chem. Soc.*, 1951, 612) have proposed a new convention for the specification of configuration, which is free from the ambiguities of the current system.] C—9.

Crystals: Degree of Imperfection. N. W. H. Addink. *Rec. Trav. Chim.*, 1951, **70**, No. 2, pp. 202-208. In English. An attempt is made to arrange crystals of various materials according to their degree of imperfection, derived from the apparent value of N (Avogadro's number). N has been determined for each kind of crystal according to the formula: $N = c.M/V.d$, where M is the molecular weight, c is a factor related to the number of molecules per unit cell, V is the volume of the unit cell, and d is the density of the crystal. C—9.

Absolute Configuration of Optically Active Compounds: Determination by Means of X-Rays. A. F. Peerdeman, A. J. van Bommel and J. M. Bijvoet. *Proc. K. Ned. Acad. Wet.*, 1951, **B**, **54**, No. 1, pp. 16-19. In English. A new method of determining the absolute configuration of optically active compounds is suggested, and tested on ordinary dextrorotatory tartaric acid. C—9.

A Dielectric Constant Method of Following the Non-Stationary State in Polymerization. I. The Theory of the Method. C. M. Burrell, T. G. Majury and H. W. Melville. *Proc. Roy. Soc.*, 1951, **A**, **205**, 22 February, pp. 309-322. The change of dielectric constant accompanying reaction has been used to investigate the non-stationary state of chemical reactions, polymerizations in particular. A recording capacity bridge was constructed with a sensitivity of 1 part in 10^8 in capacity, and a time resolution of 10^{-3} sec. The capacity element in this bridge consisted of the liquid reaction system enclosed in a silica cell. C—9.

A Dielectric Constant Method of Following the Non-Stationary State in Polymerization. II. The Operation and Performance of the Instrument. T. G. Majury and H. W. Melville. *Proc. Roy. Soc.*, 1951, **A**, **205**, 22 February, pp. 323-335. The operation of the instrument described in part I, and the interpretation of the results in terms of the amounts of polymerization that occur as a result of photochemical initiation, are described. The sensitivity has been independently checked and found to agree with calculation. The usefulness of the instrument is said to be governed by the inherent drift, and in this application, by the loss of heat from the reaction mixture. These factors impose an upper limit of about one minute for the useful time of observation. C—**9.**

A Dielectric Constant Method of Following the Non-Stationary State in Polymerization. III. The Determination of Rates of Polymerization and of Radical Lifetimes. T. G. Majury and H. W. Melville. *Proc. Roy. Soc.*, 1951, **205**, **A**, 7 March, pp. 496-516. This method has been applied to the polymerization of styrene, vinyl acetate, methyl acrylate and butyl acrylate, initiated both by continuous illumination and by use of a flash discharge tube. It has proved possible to delineate the course of the non-stationary state with continuous illumination, and also to delineate the decay of radical concentration when illumination ceases. With the flash, the decay of radical concentration can be delineated. The analysis of these records gives the values of the lifetimes of the radicals and the corresponding rates of polymerization. These lifetimes agree reasonably with those determined by other methods. The application of this method generally, and of the instrument itself to other problems in physical chemistry, is indicated. C—**9.**

Elastic Viscous Oleate Systems Containing Potassium Chloride. XV. Note on the Relation between n and Λ. H. G. Bungenberg de Jong. *Proc. K. Ned. Acad. Wet.*, 1951, **B**, **54**, No. 1, pp. 1-12. The fifteenth article in this series continues the discussion of the relation between n (the maximum number of observable turning-points) and Λ (the logarithmic decrement). C—**9.**

Protein Hydration: Estimation by Dielectric Measurements at Microwave Frequencies. G. H. Haggis, T. J. Buchanan and J. B. Hasted. *Nature*, 1951, **167**, 14 April, pp. 607-608. An attempt has been made to estimate protein hydration from dielectric measurements made in the microwave region (wavelength 10-1 cm.). C—**9.**

Filtration through a Sorbent Layer. IV. The Ψ Condition, a Simple Approach to the Theory of Sorption Columns. V. "Final Form" Fronts and Broadening Fronts. L. G. Sillén. *Ark. Kemi*, 1950, **2**, *Paper* 34, pp. 477-498 and *Paper* 35, pp. 499-512 (through *Sci. Abstr.*, 1951, **A**, **54**, February, pp. 163-164). (IV) Ψ for a given layer I is defined as $\Psi = V/x$ (where x = distance from beginning (B) of column, V is the volume of solution between I and B. The Ψ-condition is said to hold when c_i and q_i can be expressed as functions of Ψ, that is when the boundary conditions contain Ψ as the only variable, and not V or x separately; equilibrium is assumed everywhere between solution and solvent. (c_i millimol/l. is the concentration of a solute A_i in the solution at a given point (x, V); q_i millimol is the amount of solute A_i sorbed per cm. of sorbent.) Equations are derived which enable the shape of the fronts to be calculated. Special cases considered are: the desorption, and the sorption, of a single solute; the sorption of several solutes (frontal analysis); exchange sorption (ion exchange), including the displacement of a mixture of ions. (V) The methods of part IV for equilibrium (E) are adapted to the conditions of non-equilibrium (N). A system which would give a sharp front with E gives a front of "final form" with N, that is a form which moves through the column with the same speed as the E front would have had; otherwise a broadening front is obtained. The shape of the final form front is worked out for ordinary sorption and for ion exchange, including displacement separation; for broadening fronts it is shown how to calculate the sorption isotherm from measurements on the eluate at low velocities of flow. Doubt is expressed as to the validity of the analogies with heat flow and with distillation. C—**9.**

Pressure and Chain Length: Effect on Desorption. L. Sharaga. *C.R. Acad. Sci., Paris*, 1950, **231**, 31 July, pp. 335-337. In French. (Through *Sci. Abstr.*, 1951, **A**, **54**, February, p. 99.) Study of films of lauric and myristic acids confirms that the desorption is governed by diffusion. Diffusion constants are found and Traube's law verified. C—**9.**

Non-Newtonian Flow of Dilute Polymer Solutions. I. Outline of Method. G. De Wind and J. J. Hermans. *Rec. Trav. Chim.*, 1951, **70**, No. 7, pp. 521-536. In English. The authors have developed a method for the study of non-Newtonian behaviour of dilute polymer solutions with a view to extrapolating results to infinite dilution. The use of the capillary viscometer is discussed. As a check on the equation used, some measurements with water, benzene, and acetone, are reported. C—9.

Osmotic Pressure Measurement: Theory. A. J. Staverman. *Rec. Trav. Chim.*, 1951, **70**, No. 4, pp. 344-352. In English. Onsager's symmetry relationships have been applied to the process of diffusion through a membrane. The results show that measured osmotic pressures deviate from those calculated thermodynamically, in proportion to the permeability of the membrane to the solute molecules. One dynamic osmotic determination therefore gives little information, but simultaneous measurement of osmotic pressure and permeation through different membranes, enables the entire molecular-weight distribution of the solute to be computed. C—9.

Alkaline Casein Dispersions: Spontaneous Gelation. K. F. Plomley, H. G. Higgins and J. F. Hayes. *Nature*, 1951, **167**, 10 February, pp. 224-225. In this study of the gelation of an alkaline casein dispersion, relations between the following are determined: (1) viscosity and time after mixing the dispersion, (2) *pH* and viscosity and, (3) *pH* and the rate of gelation $\frac{d\eta}{dt}$, where η is the viscosity and t, the time. C—9.

Alkaline Casein Dispersions: Spontaneous Gelation. R. L. Wormell. *Nature*, 1951, **167**, 19 May, p. 816. This article comments upon a communication of Plomley, Higgins and Hayes (see previous abstract)—a communication which describes the dependence of viscosity and rate of gelation on the *pH* of the protein solution. The specific group concerned in gelation is considered to be the sulphydryl group. The gelation of an alkaline casein dispersion is reported. C—9.

Sulphydryl-Disulphide Relationships in the Induction of Gels in Proteins by Urea. Charles Huggins, Donald F. Tapley and Elwood V. Jensen. *Nature*, 1951, **167**, 14 April, pp. 592-593. A mechanism is put forward for the production by urea of gels in serum albumin and γ-globulin. The linking together of protein molecules by means of a sulphydryl-disulphide chain reaction is postulated. C—9.

Surface Activity. J. L. Moilliet and B. Collie. London: Spon, 1951, x+379 pages. This book is divided into three parts: the first discusses the physical chemistry of surface-active agents and interfacial processes; the second deals with technical applications of synthetic surface-active agents (wetting out, waterproofing, emulsions, dispersions, detergency, and dyeing assistants); and the third is concerned with the chemical constitution of synthetic surface-active agents. There is a short trade-name index, as well as an author index and a subject index. C—9.

Viscosity of Binary Liquid Mixtures. N. L. Balazs. *Rec. Trav. Chim.*, 1951, **70**, No. 5, pp. 412-418. In English. The author gives an approximate theoretical deduction, corresponding to empirical relations derived by earlier workers, for the viscosity coefficient of binary mixtures. This deduction combines a modification of Eyring's theory of viscous flow, with the statistical model derived by Guggenheim for strictly regular solutions. C—9.

Ferric-ion Catalysed Decomposition of Hydrogen Peroxide and the Polymerization of Acrylonitrile. Adolf G. Parts. *Nature*, 1951, **168**, 14 July, p. 79. The velocity of decomposition of hydrogen peroxide in the presence of iron (III) ion was greatly reduced in the presence of acrylonitrile. During the reaction a polymer was formed. C—9.

Cellulose: Fine Structure. A. Frey-Wyssling and K. Mühlethaler. *Fortschritte der Chemie organischer Naturstoffe*, 1951, **8**, pp. 1-27. In English. This is a review with sixty-one references. It is illustrated with electron micrographs of microfibrils (the elementary fibres of native cellulose), each of 200-300 Å diameter, the internal structure of which consists of parallelized micellar strands with a diameter of about 50 Å. The orientation of the microfibrils in cell walls is responsible for their physical properties such as swelling and strength. The

microfibrils of the primary cell walls are interwoven; in the secondary walls of fibres they are parallelized. As a consequence of this texture, plant fibres have interfibrillar capillaries which are accessible to direct dyes, but the intermicellar spaces are accessible only to small molecules showing a specific affinity for cellulose, such as water and alkali molecules. C—9.

Optical Rotation and Chain Folding in Synthetic Polypeptides and Gelatin. Conmar Robinson and M. J. Bott. *Nature*, 1951, **168**, 25 August, pp. 325-326. Experiments were done to confirm the supposition that optical rotatory power could be used to indicate the change of configuration in protein solutions. A striking relationship was found between the specific rotation of solutions of a synthetic poly-peptide (γ-methyl-L-glutamate D-L phenylalanine copolymer) and the percentage of the α-configuration present in films prepared from the solutions. Changes in configuration during the gelling of gelatin were studied, and related to specific rotation. A tentative picture of the gelling mechanism is put forward. C—9.

Liquids: A Relationship between Heat Conductivity and Viscosity. S. R. Mohanty. *Nature*, 1951, **168**, 7 July, p. 42. An alteration is suggested to the formula developed by Andrade (*Phil. Mag.*, 1934, **17**, 497). The formula derived is: $MK/\eta=6$, where M is the molecular weight of the liquid, K is the heat conductivity and η, the viscosity. The author has examined liquids such as acetone, ether and toluene, and finds that the mean value of the constant is 10·8 (cf. 6). C—9.

Celluloses: Relative Crystallinity. R. F. Nickerson. *Advances in Carbohydrate Chemistry*, 1950, **5**, pp. 103-126. This is a critical review of the subject, with forty references to the literature. It deals with both X-ray diffraction, and chemical studies. C—9.

Statistical Theory of Solutions. A. B. D. Cassie. *Nature*, 1951, **168**, 1 September, p. 382. A simple equation has been obtained for the water vapour pressure isotherm of sulphuric acid solutions. Two water molecules are considered to become attached to each sulphuric acid molecule. There is no entropy of mixing. C—9.

Ultraviolet Light: Effect on Methyl Cellulose in Solution. L. Spitze, A. Mooradian, R. H. Hartigan and L. A. Hansen. *J. Amer. Chem. Soc.*, 1941, **63**, No. 6, pp. 1576-1580. Using a quartz capillary, mercury arc lamp to furnish ultra-violet light, a sample of methylcellulose in water was irradiated in a stoppered quartz flask. Viscosity, osmotic pressure, and copper number data show that the methyl cellulose molecule is degraded. A modification of the Heyes micro copper-number procedure for cellulose was developed and applied to the degraded methyl cellulose solutions. C—9.

Native Proteins: Photochemistry. E. K. Rideal and R. Roberts. *Proc. Roy. Soc.*, 1951, **A, 205**, 22 February, pp. 391-408. Previous investigations carried out in this field are briefly reviewed. In order to obtain confirmation of the direct absorption of light at the peptide linkage when a protein is irradiated with ultra-violet light, an examination of crystalline bovine serum albumin, and gelatine was made. A mechanism for the phenomenon of aggregation is put forward, and a theoretical equation for the rate of aggregation has been determined. Aggregation is considered to be due to the breakdown of the keto-imino linkage, and the reaction of the freed radicals with the carboxyl and hydroxyl groups of other protein molecules. The quantum efficiency of the process has been determined. In the case of photo-oxidative breakdown of protein, it is thought that liberated hydroxyl radicals react with free radicals formed by the protein, and thus prevent aggregation. C—9.

Dyes: The Relation between the Absorption Spectra and the Chemical Constitution. XVI. The Separation of Chromophores in Unsymmetrical Disazo Dyes. Wallace R. Brode and John D. Piper. *J. Amer. Chem. Soc.*, 1941, **63**, No. 6, pp. 1502-1505. Measurements of the absorption spectra of a number of disazo dyes in various solvents have been made and their correlation with the chemical constitution of the dyes has been discussed. C—9.

Fresnel Diffraction at a Transparent Lamina. R. C. Faust. *Proc. Phys. Soc.*, 1951, **B, 64**, No. 2, pp. 105-113. Fresnel diffraction at the edge of a transparent lamina has been studied, and an analogy drawn between the observed phenomena and interference fringes of the Fizean and Edser-Butler types. The variation of

the diffraction pattern with changing wavelength has been employed to determine accurately both the thickness and the refractive index of thin transparent sheets. The refractive index was found by an immersion method, the accuracy of which is discussed. The Becke line which is often observed during such measurements is shown to be a strongly asymmetrical diffraction pattern occurring when the thickness of a lamina changes over a small but finite distance. C—**9.**

An Interferometric Method for Accurate Thickness Measurements of Thin Evaporated Films. L. G. Schulz. *J. Opt. Soc. Amer.*, 1950, **40**, No. 10, pp. 690-692. A method is described in which a Fabry-Perot interferometer is used to measure the thickness of uniform thin films to an accuracy of ± 15Å. The method is evaluated by comparison with other methods, and in terms of its applications and limitations. C—**9.**

A New Photometric Device. John E. Tyler. *J. Opt. Soc. Amer.*, 1950, **40**, No. 10, pp. 693-694. Two photometric devices, which should prove useful for transmission or reflection measurements of neutral or coloured materials, are described. C—**9.**

Periodic Statistical Distortion of Unidirectionally Ordered Diffractors, with Application to Collagen. Richard S. Bear and Orvil E. A. Bolduen. *J. Appl. Phys.*, 1951, **22**, No. 2, pp. 191-198. The diffraction expected of distorted, one-dimensionally ordered cylinders (fibrils) is considered quantitatively. It is demonstrated briefly that certain dry collagen specimens exhibit small-angle diffraction in which the characteristics of uniformity and two types of distortion—longitudinal and radial—are apparent. C—**9.**

Optical Methods in Crystal-Structure Determination. C. A. Taylor and H. Lipson. *Nature*, 1951, **167**, 19 May, pp. 809-810. A brief account of the principle of optically derived Fourier transforms is given, with an illustration of its use in the examination of crystal structure. C—**9.**

"Phase-Contrast" Methods and Birefringence. R. Barer. *Nature*, 1951, **167**, 21 April, pp. 642-643. The advantages of polarized light are described when viewing birefringent objects under the microscope in phase-contrast or interference conditions. Accompanying photographs show how the appearance of cellulose fibres depends on the direction of polarization. C—**9.**

Luminosities: Some Consequences of the Additivity. R. H. Sinden. *J. Opt. Soc. Amer.*, 1950, **40**, No. 10, pp. 647-652. The author discusses the capacity of the visual sensory mechanism to judge luminosity in accordance with the law of the additivity of luminosities. While the trisensational sensory system appears to satisfy the law only within limits, it is suggested that a sensory system in which luminosity is associated exclusively with a single element of the system, would satisfy the law unconditionally. C—**9.**

Stress Birefringence in Polyethylene. S. M. Crawford and H. Kolsky. *Proc. Phys. Soc.*, 1951, **B, 64**, No. 2, pp. 119-125. The birefringence and strain produced on stressing polyethylene at different temperatures have been measured. The purpose was to see whether any true flow takes place on stretching, or if a reversible orientation of the long chain molecules is all that occurs. An attempt is made to interpret the strain-birefringence curves quantitatively in terms of the orientation of the crystallites on stretching. C—**9.**

Colour Sensitivity of the Eye: Changes with Posture. J. N. Aldington. *Nature*, 1951, **168**, 14 July, p. 86. A difference in colour response between the two eyes has been observed when a subject was in the prone position lying on one side. The lower eye appeared markedly red-sensitive, while the upper eye appeared equally blue-sensitive. C—**9.**

Absorption Edges on Debye-Scherrer X-Ray Photographs. R. Brooks. *Brit. J. Appl. Phys.*, 1951, **2**, No. 3, pp. 76-77. On powder photographs, taken with $K\alpha$ radiation obtained by filtering X-rays from a pure metal target through the appropriate "β-filter", sharped-edged bands, which are not normal powder lines, may occur in the low-angle region. These are shown to be due to residual X-rays of short wave-length which give rise to dark bands where fluorescence of silver and bromine occurs in the photographic emulsion. It is concluded that in the analysis of mixtures, it should be borne in mind that bands of this sort accompany all strong $K\alpha$ reflections from the specimen, and they should be carefully distinguished from weak $K\alpha$ reflections. C—**9.**

Crystallography in Modern Science. F. A. Bannister. *Nature*, 1951, **167**, 16 June, pp. 965-968. A summary is given of four lectures, on the applications and relationship of crystallography to physics, geology, biology and chemistry respectively, given by Kathleen Lonsdale, F. A. Bannister, Dorothy Hodgkin and J. Monteath Robertson at the Royal Institution. In the lecture on crystallography in biology, the various kinds of structure found in fibrous and globular proteins, in peptide chains, in keratin, collagen and muscle fibrils, in protein crystals, and in other classes of biological compounds, are mentioned. C—**9.**

Latex Particle Size from X-Ray Diffraction Peaks. K. L. Yudowitch. *J. Appl. Phys.*, 1951, **22**, No. 2, pp. 214-216. A high resolution camera was constructed for small X-ray scattering. Measurements with this camera on Dow latex 580G exhibit a number of concentric rings. Each ring is associated with a theoretical maximum of scattered intensity predicted by the spherical X-ray form factor corrected for packing. The particle diameter can be computed from the position of each ring. Twenty measurements yield a diameter of 2780Å with a probable error of less than ± 1 per cent. C—**9.**

Native Cellulose: Micellar Structure. S. M. Mukherjee, J. Sikorski and H. J. Woods. *Nature*, 1951, **167**, 19 May, pp. 821-822. Native cellulose particles of micellar dimensions were obtained by treating cotton and ramie with acid. Their structure was examined by X-rays. The yield of such particles from jute was much less and much more difficult to obtain. C—**9.**

X-Ray Scattering: A New Type. K. Das Gupta. *Nature*, 1950, **166**, July 8th, p. 56, and 1951, **167**, 24 February, pp. 313-314. In the second paper, the author gives some details of methods used to verify a new type of X-ray scattering which he has observed, and which is described in the earlier paper. C—**9.**

Polypeptide Chains: New X-Ray Evidence on the Configuration. Polypeptide Chains in Poly-γ-benzyl-L-glutamate, Keratin and Hæmoglobin. M. F. Perutz. *Nature*, 1951, **167**, 30 June, pp. 1053-1054. This communication describes a new reflexion, not hitherto observed, which is given by polypeptide chains in certain synthetic polymers, in fibrous proteins of the keratin-myosin-fibrinogen group, and in hæmoglobin. The spacing at which this reflexion appears, namely, 1·50Å. from planes perpendicular to the fibre axis, corresponds to the model proposed by Pauling, Corey and Branson (*Proc. U.S. Nat. Acad. Sci.*, 1951, **37**, 205) in which the spacing of successive amino-acid residues along the chain is given as 1·5Å. The appearance of this reflexion is incompatible with any other model so far proposed to account for the X-ray diffraction pattern of these proteins. The discovery of the 1·5Å. reflexion is thought to show that even relatively disordered substances like hair may contain an atomic pattern of such high intrinsic regularity that it gives rise to X-ray diffraction effects at spacings where they had never before been suspected. C—**9.**

On the X-Ray Absorption Correction for Encased Diffracters in the Debye-Scherrer Technique. H. L. Ritter, R. L. Harris and R. E. Wood. *J. Appl. Phys.*, 1951, **22**, No. 2, pp. 169-176. The authors show how the diffraction pattern for a liquid enclosed in a glass container may be corrected for the diffuse diffraction of the container, as well as for absorption in the liquid and in the glass. Their sample consisted of a cylinder surrounded by another annular cylinder, both when the core was inert (that is, absorbing and producing only extraneous scattering) and when the annulus was inert. C—**9.**

Silk Fibroin: Relation of the Globular to the Fibrous Form. O. Kratky, E. Schauenstein, A. Sekora, I. Lapp and W. Berndt. *Nature*, 1951, **167**, 26 May, pp. 861-862. Reflexions in X-ray diagrams obtained after silk II is treated with hot alkali are examined. The net plane with D=45Å. coincides with equator reflexions (D=9·15 and 4·57 Å.), which represent the plane of flat micelles. Higher orders corresponding to silk III are observed after treatment, but the following samples could not be transformed into silk III: (1) cocoon filaments and films stored for more than a year; (2) films of renatured silk, and (3) films of silk II prepared from a gland which has been stored for some days. Ultra-violet absorption investigations are reported on the alkali-treated silk. The structure of the silk fibroin is interpreted in the light of the information obtained from the X-ray diagrams. C—**9.**

A Simple Goniometer for the Study of Crystal Surfaces. P. R. Rowland. *J. Sci. Instrum.*, 1951, **28**, No. 2, p. 61. In order to identify the crystallographic

direction of a reflection from a spherical crystal or flat surface which has been etched, the crystal was mounted at the centre of a transparent sphere made of Perspex. When a parallel beam of light was directed at the crystal, the points at which it was reflected back were marked on the sphere. There is a diagram and a photograph. C—9.

Geiger-Müller Counter X-Ray Spectrometer: Use in an X-Ray Laboratory, with Special Reference to Automatic Recording. C. Wainwright. *Brit. J. Appl. Phys.*, 1951, **2**, No. 6, pp. 157-163. The author discusses the advantages and limitations of Geiger-counter techniques, in a laboratory applying X-ray methods to a variety of problems, and describes some simple examples. These illustrate the value of this method in obtaining semi-quantitative results very rapidly, and in following the effects of various treatments. The accuracy of the method is considered in relation to the statistical effects associated with the operation of the Geiger counter and the influence of damping in the recording system. C—9.

Water-Soluble Silk: An α-Protein. E. J. Ambrose, C. H. Bamford, A. Elliott and W. E. Hanby. *Nature*, 1951, **167**, 17 February, pp. 264-265. Physical and chemical properties of silk fibroin, made water-soluble by the action of lithium bromide, are investigated and compared with those of natural silk. Certain postulations are made in regard to its molecular structure. C—9.

Adsorption of Water Vapour on Solid Surfaces. F. P. Bowden and W. R. Throssell. *Nature*, 1951, **167**, 14 April, pp. 601-602. Investigations show the thickness of water films adsorbed on metal, diamond, or zinc blend surfaces, at high relative humidities, to be at most a few molecular layers. Heavy adsorption of water on metal surfaces is considered to be due to contaminants, such as hygroscopic salts, on the surface. C—9.

Adsorption of Water Vapour on Solid Surfaces. W. H. J. Vernon. *Nature*, 1951, **167**, 23 June, pp. 1037-1038. Results of investigations on the adsorption of water vapour on metal surfaces confirm the observations of F. P. Bowden and W. R. Throssell (*Nature*, 1951, **167**, p. 601) that the adsorption of water vapour is negligible provided that both the metal surface and the atmosphere are free from contamination. Experiments are reported in which metal surfaces, previously exposed to traces of sulphur dioxide, were found to become rapidly covered with a film of water. C—9.

The Ångström. E. A. Guggenheim. *Nature*, 1951, **167**, 14 April, p. 614. In a letter the author discusses the use of the abbrevation "Å" as against "A" for the ångström unit. C—9.

Angstrom Units, A. or Å.? F. Twyman. *Nature*, 1951, **167**, 10 February, p. 245. The author argues that the symbol for Ångström unit should be printed as the small roman capital "A", rather than as "Å". C—9.

Boltzmann's Superposition Theory: Application to Materials Exhibiting Reversible β Flow. C. Henderson. *Proc. Roy. Soc.*, 1951, **206, A**, 22 March, pp. 72-86. Boltzmann's theory of superposition is applied to the flow and recovery of a material in the so-called anelastic region, in which deformations outside the elastic region are slowly recoverable on removing the stress. Experimental work to test the theory is described. C—9.

The Capacitance of a Parallel-Plate Condenser with an Anisotropic Dielectric Cylinder in Torsion between its Plates. C. Mack. *Phil. Mag.*, 1951, **42**, Seventh Series, April, pp. 428-431. This is a short version of a longer paper which is to appear in the *Shirley Institute Memoirs*. Equations are developed for determining the capacity of a parallel-plate condenser with an anisotropic dielectric cylinder in torsion between its plates. The equations will be used in estimating the accuracy of the capacitance method of measuring the irregularity of cotton yarn. C—9.

The Cine Flash: A New Lighting Equipment for High-Speed Cinephotography and Studio Effects. H. K. Bourne and E. J. G. Beeson. *J. Soc. Mot. Pict. and Television Eng.*, 1950, **55**, No. 3, pp. 299-312 (through *Kodak Mthly Abstr. Bull.*, 1951, **37**, No. 3, p. 92. A new form of portable lighting equipment is described, which gives sufficient light output for colour photography at speeds up to 3,000 frames per second, or for black-and-white photography where considerable depth of focus is desired with small lens apertures. C—9.

Course in Industrial Instrument Technology. *Sections I and II.* J. T. Miller. *Instrum. Pract.*, 1951, **5**, No. 4, pp. 201-212; No. 5, pp. 269-275. *Section I.* This is the first article of a series designed for the use of plant operatives, students, apprentices and others who wish to brush up their knowledge of industrial instrument technology. It deals with the basic mechanical elements of instruments, the Bourdon tube, and its use in instruments to measure liquid expansion, gas expansion and vapour-pressure. The article is illustrated with simple diagrams. *Section II.* This article deals with diaphragms, diaphragm stacks, and bellows, and with their application in the measurement of absolute pressure, relative vacuum, liquid level, and temperature. **C—9.**

Deviations from Hooke's Law and the Domain of Stability. A. Kammerer. *C.R. Acad. Sci., Paris*, 1950, **231**, 9 October, pp. 681-683. In French. (Through *Sci. Abstr.*, 1951, **A**, **54**, February, p. 153). A non-linear stress-strain relation is used to define the limiting surface of the region of stability. **C—9.**

Electric and Chemical Potentials; Different Methods for Treatment and their Relation. S. R. De Groot and H. A. Tolhoek. *Proc. K. Ned. Acad. Wet.*, 1951, **B**, **54**, No. 1, pp. 42-53. In English. Two methods are discussed for the treatment of problems of conduction of electricity in continuous media (electrolytes, especially) in which flows of matter, conduction of heat and chemical reactions are also possible. **C—9.**

A Formula for Ship and Model Skin Friction Resistance. G. G. McDonald. *Engineer*, 1951, **191**, 13 April, p. 484. In this note a new procedure is offered for the estimation of the skin friction coefficient for a full-size ship. It consists of an empirical skin friction formula for the transition region between the smooth-turbulent and rough-turbulent types of flow. **C—9.**

The Electrical Resistance Method of Measuring Soil Moisture. D. Croney, J. D. Coleman and E. W. H. Currer. *Brit. J. Appl. Phys.*, 1951, **2**, No. 4, pp. 85-91. In this paper, an analysis is made of the electrical resistance method of measuring soil moisture. A new type of concentric electrode moisture gauge, of very small size and rapid response, is described. There are nine references. **C—9.**

The Friction and Mechanical Properties of Powders Bonded by Synthetic Resins. R. C. Parker and E. J. W. Whittaker. *Proc. Phys. Soc.*, 1951, **B**, **64**, No. 2, pp. 126-134. The coefficient of friction, and mechanical properties have been determined for a series of non-metallic materials formed by bonding mineral powders with resins. The manner in which the coefficient of friction varies with particle size has been studied, and a tentative explanation involving certain geometrical parameters is advanced. A correlation was observed between the coefficient of friction, and the hardness of the mineral powders expressed on Moh's scale. Marked correlations were also obtained between compression strength, cross-breaking strength and the reciprocal of the particle size for most of the materials; consideration is given to the various mechanical and thermodynamical factors involved. **C—9.**

Friction and Viscosity in Plastic Bodies. F. Charron. *C.R. Acad. Sci., Paris*, 1950, **231**, 2 October, pp. 646-647. In French. (Through *Sci. Abstr.*, 1951, **A**, **54**, February, p. 153.) A frictional coefficient f and a viscosity coefficient η can be associated with a readily deformable plastic body, such as a grease, in such a way that the shear stress X is related to the velocity gradient u_z by the equation $X=f+\eta u_z$. Boundary conditions are more complicated than for viscous flow, depending on the roughness of the solid boundaries, and special precautions must be taken in practice to prevent slipping. **C—9.**

A Flying-Spot Microscope. J. Z. Young and F. Roberts. *Nature*, 1951, **167**, 10 February, p. 231. A new type of microscope is briefly described in a letter. A cathode-ray tube providing a televising raster of high brilliance and very short time-constant is placed in front of the eyepiece of the microscope. The microscope objective translates the beam into a minute spot of light which scans the specimen to be examined. The light is picked up by a multiplier photocell, whose output is used to modulate the raster on a second cathode-ray tube, of projection type. The new microscope has many advantages, which include a large and very bright projection, substantially greater resolution, and the possibility that it might be used to count and size particles. **C—9.**

Flow of Water in Canals and Rivers: Historic Development of the Theory. Serge Leliavsky Bey. *Engineer*, 1951, **191**, pp. 466-468, 498-501, 533-535, 565-567, 601-603. In five articles on this subject, the author introduces some basic fallacies which have crept into and handicapped the progress of hydraulic theory and which still influence some modern publications. They are: (1) the "scala" fallacy, that maximum velocity in a river is at the bottom; (2) the friction fallacy of Galileo, who did not realise the retarding effect exerted by the channel on the flow; (3) the fallacy of the independence of the flow from the physical characteristics of the channel (bends, curves, etc.). More modern attempts to deal with the subject of water flow through channels are outlined, and developed in the later articles. C—**9.**

An Interferometer Microscope for Opaque Objects. J. Dyson. *Nature*, 1951, **167**, 10 March, p. 397. An optical system is described which makes possible the examination at high resolution of opaque objects by interference. It can be mounted on an ordinary microscope stand. C—**9.**

Frictional Electrification: Interpretation of Experiments. W. R. Harper. *Nature*, 1951, **167**, 10 March, pp. 400-401. The results of experiments on frictional electrification by several investigators are interpreted. There are eight references. C—**9.**

Large Elastic Deformations of Isotropic Materials. VI. Further Results in the Theory of Torsion, Shear, and Flexure. R. S. Rivlin. *Phil. Trans. Roy. Soc. London*, 1949, **A**, **242**, No. 845, pp. 173-195. The forces necessary to produce certain simple types of deformation in a tube of incompressible, highly elastic material, isotropic in its undeformed state, are discussed. The first type of deformation may be considered to be produced by the following three successive simpler deformations: (i) a uniform simple extension, (ii) a uniform inflation of the tube, in which its length remains constant, and (iii) a uniform simple torsion in which planes perpendicular to the axis of the tube are rotated in their own plane through an angle proportional to their distance from one end of the tube. Certain special cases of this deformation are considered in greater detail employing a simple stored-energy function. The second type of deformation considered is that in which the simpler deformations (i) and (ii) above are followed successively by simple shears about the axis of the tube and parallel to it. Finally, the simultaneous simple flexure and uniform extension normal to the plane of flexure of a thick sheet is discussed. There are nine references. C—**9.**

Mechanics of Large Elastic Deformations with Special Reference to Rubber. R. S. Rivlin. *Nature*, 1951, **167**, 14 April, pp. 590-591. A mathematical theory, based on three assumptions, enables the interpretation of the load-deformation relations for various types of deformation in terms of each other. C—**9.**

Plastic Deformation. P. Cicala. *Atti Accad. Naz. Lincei* (*R.C. Sci. Fis. Mat. Nat.*), 1950, **8**, June, pp. 583-587 (through *Sci. Abstr.*, 1951, **A**, **54**, February, p. 153). The main features of the many diverse theories of plastic deformation due to a body having undergone an elastic strain are described. An idea of Batdorf and Buriansky, based on the concept of slip, is examined mathematically by tensor analysis. Agreement of the resultant formula with experiment is good when applied to various particular examples. C—**9.**

A Rapid Water-Vapour-Permeability Comparator. C. R. Oswin. *Chem. & Ind.*, 1951, No. 23, p. 444. This note describes the trial of a prototype instrument designed to give rapid comparisons of the permeabilities of thin sheet materials to water vapour. The permeability cell consists essentially of a septum of the material clamped over a dish of water containing tritium, the radioactive isotope of hydrogen. A Geiger counter is used to determine the isotope passing through the membrane. C—**9.**

Compound Microscopes in the 19th Century: Some Remarks on Development. P. H. Van Cittert and J. G. Van Cittert-Eymers. *Proc. K. Ned. Acad, Wet.*, 1951, **B**, **54**, No. 1, pp. 73-80. In English. The development of high resolving power and its relation to the numerical aperture are traced in continental and British microscopes in the 19th Century. C—**9.**

A Stereoscopic Technique for Use with an Electron Microscope. J. W. Sharpe. *Brit. J. Appl. Phys.*, 1951, **2**, No. 3, pp. 78-80. Details are given of the method of operating a stereo-holder for use with the Metropolitan-Vickers type EM2 electron microscope. The construction of the holder is described. C—**9.**

Motions in a Rotating Liquid: Study. G. W. Morgan. *Proc. Roy. Soc.*, 1951, **206, B**, 22 March, pp. 108-130. The "small motions" resulting from forced oscillations of a rotating liquid are investigated. It is shown that there are three types of flow depending on the relative magnitudes of the impressed frequency, β, and the angular velocity R, of the fluid. Two of these are studied in detail. A similarity law is developed which gives the solution of a class of problems of oscillations for $\beta > 2R$ in terms of the solutions to similar irrotational problems. An attempt is made to explain how slow, two-dimensional motion can be produced by introducing a boundary condition which is three-dimensional, and by considering problems from the moment the disturbance is created in the rotating system, the only initial assumption being that the fluid is rotating uniformly like a solid body. C—9.

Temporary Reduction of Viscosity of Liquids at High Rates of Shear. W. J. Morris and R. Schnurmann. *Nature*, 1951, **167**, 24 February, p. 317. Data obtained on the viscosity of tetradecane, using a jet viscometer, confirms again the view that, at sufficiently high rates of shear, any liquid consisting of elongated molecules must be expected to exhibit a decrease of the coefficient of viscosity with increasing rate of shear. C—9.

Thermodynamics of Muscle. A. V. Hill. *Nature*, 1951, **167**, 10 March, pp. 377-380. This and the two following papers are papers dealing with the subject in a general way, and were contributions to a general discussion on "The Thermodynamics of Muscle", which took place at the International Congress of Physiology, Copenhagen, in August 1950. (See two following abstracts.) C—9.

Thermodynamics of the Contractile Actomyosin Model. H. H. Weber. *Nature*, 1951, **167**, 10 March, pp. 381-383. (See preceding abstract.) C—9.

Nature of the Contraction of Muscle. Albert Szent-Györgyi. *Nature*, 1951, **167**, 10 March, pp. 380-381. (See abstracts above.) C—9.

Thermodynamics and Rheological Behaviour of Elastoviscous Systems Under Stress. F. H. Garner, A. H. Nissan, and G. F. Wood. *Phil. Trans. Roy. Soc. London*, 1950, **A, 243**, No. 858, pp. 37-66. The systems discussed were obtained by dissolving aluminium and calcium soaps of fatty and naphthenic acids in hydrocarbons with the aid of peptizers like water, xylenols, alcohols, "Cellosolve" or cresols. They behave similarly to solutions of rubber in benzene. Rheologically they exhibit certain peculiarities associated with secondary flow phenomena. It was observed that when such systems were subjected to stress, their free energies increased. Several series of experiments were carried out as follows: (i) experiments dealing with the behaviour of jets in the form of expanding conical sheets; (ii) experiments dealing with the quantitative evaluation of the free energy on subjecting the systems to stress at different temperatures; (iii) experiments on the behaviour of these systems when subjected to different states of shear between discs, cones or cylinders in which one member was rotated and the other held stationary; and (iv) experiments with pipes on these systems. C—9.

Polythene: The Variation of the Dynamic Elasticity with Strain. K. W. Hillier. *Brit. J. Appl. Phys.*, 1951, **2**, No. 6, pp. 167-170. The variation in the dynamic elastic modulus of polythene, when filaments of the material were subjected to increasing tensile strain, is described. The dynamic modulus was obtained from observed values of the velocity of propagation of longitudinal oscillations, using several frequencies and at four temperatures. The results are discussed with reference to the structure of polythene filaments, and the probable changes that occur on stretching. There are nineteen references. C—9.

Viscosity-Temperature Dependence. I. Williamson. *Nature*, 1951, 24 February, pp. 316-317. The equation put forward by Dr. A. V. Brancker to represent viscosity-temperature data (*Nature*, 1950, **166**, p. 905) does not fit data accumulated by the author on the viscosity of liquids used as plasticizers. C—9.

Radioactive Isotopes: Application to Textiles. Edward Russell Trotman. *Text. Rec.*, 1951, **69**, July, pp. 93-94. After giving a short account of the production and behaviour of radioactive isotopes, the author discusses possible uses of radioactive isotopes of the common elements in textile technology. C—9.

Ultrasonic Irradiation: Effects on the Coagulation of Cellulosic Solutions (Viscose). V. Tomberg. *Nature*, 1951, **168**, 18 August, pp. 292-293. The effects of ultrasonic irradiation on the coagulation of cellulosic solutions and on

the quality of the cellulosic lump obtained after regeneration, were studied. A method of slowing down the coagulation and regeneration rate is described. C—9.

Thermodynamics. Charles Fabry. London: Muller, 1951, x+229 pages. This is a translation, by G. F. Herrenden Harker, of the sixth French edition of *Éléments de Thermodynamique*, a book that is suggested as an introduction to the subject. C—9.

Crystals: A New Method of Observing Compton and other Incoherent X-Ray Scattering. H. J. Grenville-Wells. *Nature*, 1951, **168**, 18 August, p. 291. A divergent-beam pattern, observed on well-exposed Laue photographs when a narrow cylindrical beam of copper K+white radiation is allowed to impinge on a mosaic-type diamond, is considered to be either Compton scattering or imperfection scattering (including thermal scattering) or both. It was first thought to be a fluorescent copper K radiation generated by the presence of copper as an impurity in the crystal. C—9.

Piezo-Electric Crystals and their Applications to Ultrasonics. Warren P. Mason. New York: Van Nostrand, 1950, xi+508 pages. This is a comprehensive introduction to piezo-electricity based upon the crystal research programme of the Bell Telephone Laboratories for the past thirty years, and ranging from piezo-electric theory to the latest developments that have found industrial application. C—9.

Proteins: Structure; Two Hydrogen-Bonded Helical Configurations of the Polypeptide Chain. Linus Pauling, Robert B. Corey, and H. R. Branson. *Proc. Nat. Acad. Sci. U.S.A.*, 1951, **37**, No. 4, pp. 205-211. Information from single crystal studies of amino acids, peptides, and other simple substances related to proteins has been used by the authors to construct two reasonable hydrogen-bonded helical configurations for the polypeptide chain. In one structure, with 3·7 residues per turn, each carbonyl and imino group is attached by a hydrogen bond to the complementary group in the third amide group removed from it, in the polypeptide chain; in the other, with 5·1 residues per turn, each is bonded to the fifth amide group. These structures are claimed to be in better agreement with the experimental facts than those proposed by Astbury and Bell (see *J. Textile Institute*, 1941, **32**, A385), Huggins (see *J. Textile Institute*, 1943, **34**, A670), and Bragg, Kendrew, and Perutz (see *J. Textile Institute*, 1951, **42**, A333). The X-ray and other evidence supporting these claims is presented in a series of papers on α-keratin, α-myosin, collagen, hæmoglobin, myoglobin, and globular proteins, and some synthetic polypeptides (see following abstracts). C—9.

Atomic Co-ordinates and Structure Factors for Two Helical Configurations of Polypeptide Chains. Linus Pauling and Robert B. Corey. *Proc. Nat. Acad. Sci. U.S.A.*, 1951, **37**, No. 5, pp. 235-240. C—9.

Synthetic Polypeptides: Structure. Linus Pauling and Robert B. Corey. *Proc. Nat. Acad. Sci. U.S.A.*, 1951, **37**, No. 5, pp. 241-250. C—9.

The Pleated Sheet, a New Layer Configuration of Polypeptide Chains. Linus Pauling and Robert B. Corey. *Proc. Nat. Acad. Sci. U.S.A.*, 1951, **37**, No. 5, pp. 251-256. C—9.

Feather Rachis Keratin: Structure. Linus Pauling and Robert B. Corey. *Proc. Nat. Acad. Sci. U.S.A.*, 1951, **37**, No. 5, pp. 256-261. C—9.

Hair, Muscle, and Related Proteins: Structure. Linus Pauling and Robert B. Corey. *Proc.Nat. Acad. Sci. U.S.A.*, 1951, **37**, No. 5, pp. 261-271. C—9.

Fibrous Proteins of the Collagen-Gelatin Group: Structure. Linus Pauling and Robert B. Corey. *Proc. Nat. Acad. Sci. U.S.A.*, 1951, **37**, No. 5, pp. 272-281. C—9.

The Polypeptide-Chain Configuration in Hæmoglobin and Other Globular Proteins. Linus Pauling and Robert B. Corey. *Proc. Nat. Acad. Sci. U.S.A.*, 1951, **37**, No. 5, pp. 282-285. C—9.

Synthetic Polypeptides and Proteins: Structure. C. H. Bamford and W. E. Hanby. *Nature*, 1951, **168**, 25 August, pp. 340-341. The authors disagree with structures for proteins and synthetic polypeptides put forward in a recent series of papers by Pauling, Corey and Branson (see preceding abstracts). They dispute the claim of the latter that their proposed structure accounts for the X-ray results of Bamford, Hanby and Happey (*J. Textile Institute*, 1951, **42**, A422). C—9.

Tables for Conversion of X-Ray Diffraction Angles to Interplanar Spacing. National Bureau of Standards. Washington: United States Department of Commerce, 1950, v + 159 pages. **C—9.**

X-Ray Diffraction Studies of Crystalline Amino Acids and Peptides. R. B. Corey. *Fortschritte der Chemie organischer Naturstoffe*, 1951, **8**, pp. 310-340. This is a review of the literature. It is divided into four parts: X-ray analysis of crystals in general, studies of crystals of amino acids, studies of crystals of peptides and some related compounds, and inferences concerning protein structure. There is a bibliography, and twenty-seven literature references. **C—9.**

X-Ray Shadow Microscope. V. E. Cosslett and W. C. Nixon. *Nature*, 1951, **168**, 7 July, pp. 24-25. The principle of the X-ray shadow microscope is illustrated schematically, and a recently developed model, whose resolving power is of the order of 1 micron, is described. The specimen to be observed may be kept in atmospheric conditions. The apparatus may also be used as a fine-focus tube for X-ray analysis. Two shadowgraphs are shown. **C—9.**

Feather Barbs: Surface Cells. L. Auber and H. M. Appleyard. *Nature*, 1951, **168**, 736. The pattern formed by the surface cells of feather barbs has been shown by making casts of the barbs under pressure. The making of the casts and the resultant patterns are described. **W—9.**

Organic Acids: Action on some Fibrous Proteins: the Oxidation of Wool Keratin. S. Blackburn and A. G. Lowther. *Biochem. J.*, 1951, **49**, 554-559. The cystine of wool is rapidly oxidised by treatment with performic acid. The oxidised wool subsequently dissolves slowly and incompletely in the reagent solution. When wool is oxidised with alkaline hydrogen peroxide, a small amount of long-chain peptide material goes into solution. Fibrous proteins partially dissolve in formic acid at room temperature; the extent of solution has been correlated with the molecular configuration of the peptide chains of the protein. The small amount of wool keratin which is dissolved by formic acid probably consists of peptide chains which have been liberated from the structure by the action of weather on the raw wool. These results are interpreted in terms of changes from the α-keratin to the β-keratin configuration of peptide chains present. **W—9.**

Keratinous Tissue: Nucleic Acid Catabolites. A. Bolliger and R. Gross. *Research*, 1951, **4**, p. 438. A brief note, referring to the natural synthesis of keratin, mentions that products related to nucleic acids, *viz.* pentose, desoxyribose, and guanine have been shown to be present in the extradermal hair of mammals. It is suggested that they are the products of nucleic acid catabolism. **W—9.**

Hair: Water-extractable Constituents. A. Bolliger. *J. Investigative Dermatology*, 1951, **17**, 79-84. Aqueous extracts of clipped rabbit fur yield comparatively large amounts of uric acid and other purines, amino-acids, urea, ammonia, glycogen, pentose, phenols and citric acid; small amounts of lactic acid, creatine and creatinine are also present. Data are also given for the uric acid, pentose, glycogen, and total phenol contents in aqueous extracts of clipped mammalian hairs (including sheep). It is considered that these substances are by-products in the process of hair formation and that at least some of the substances, *e.g.* uric acid and pentose, are derived from the nucleic acids of degenerate nuclei of the epidermal cells during the process of keratinisation. **W—9.**

Wool Keratin: Sedimentation and Diffusion Studies of a Derivative. E. H. Mercer and B. Olofsson. *J. Polymer Sci.*, 1951, **6**, 671-680. Examination by sedimentation and diffusion of the fraction dissolved from wool (about 20 per cent. by weight) by saturated urea solution containing sodium bisulphate, sodium carbonate, and sodium bicarbonate at 20° C. indicates a molecular weight of 84,000. The molecule appears to consist of a single polypeptide chain folded to a length somewhat less than half as long as the fully extended chain. The results are discussed with reference to previously observed data and to the general question of keratin structure. (See *J. Textile Institute*, 1951, **42**, A574.) **W—9.**

Medullary Keratin: Tryptic Digestion. J. L. Stoves. *Research*, 1951, **4**, 485-6. The resistance to digestion by trypsin of medullary keratin after treatment with agents that form cross-linkings has been determined. The rate of digestion by

trypsin of the medulla of kolinsky fibres is decreased by treatment with tannic acid, glyoxal, formaldehyde (at *pH* 7) and, especially, by toluquinone and formaldehyde (at *pH* 1). W—**9.**

Wool Wax: Some Normal Alcohols occurring in—. J. Tiedt and E. V. Truter. *Chem. & Ind.*, 1951, No. 43, 911-912. The authors report the presence among wool wax alcohols of five straight-chain members previously unidentified. They have even-numbered carbon chains from C_{18} to C_{26}. W—**9.**

PATENT

Bleaching Wool Grease. The Lord Mayor, Aldermen and Citizens of the City of Bradford. B.P.656,626 of 29/8/1951. Wool grease is dissolved in a non-polar solvent, *e.g.* a light petroleum spirit, and decolorised with a substantial amount of an activated earth. The process can be either batch or continuous. Distillation of the petroleum extract yields a pale yellow grease. Dark grease is recovered by washing the bleaching agent with a polar solvent, *e.g.* acetone, which is then evaporated; the bleaching agent is re-activated for further use. The bleached grease is suitable for manufacture into metallic soaps for paint vehicles and for protective coatings. The dark grease can be distilled to produce lubricants, or sulphonated to produce emulsions. The pale and dark greases differ in the composition of the unsaponifiables and of the fatty acids present. W.

10—ECONOMICS

Australian Hosiery and Knitwear Industry: Brief Review. Commonwealth of Australia Ministry of National Development. Melbourne, Australian Ministry of National Development, 1951, 32 pages. This is No. 23 of a series of reviews of Australian manufacturing industries (No. 10 deals with rayon weaving, No. 16 with textile dyeing, printing and finishing, and No. 22 with "cotton textile"). It examines briefly the general demand and supply situation in the industry; the principal factors of production such as labour, material and equipment; the structure of the industry; and Government policies. C—**10.**

British Cotton Industry Delegation to India. *Indian Text. J.*, 1950, **61**, December, pp. 140-144. This is the official statement on the aims and achievements of the British Cotton Industry Delegation to India in December, 1950, which was led by Sir Raymond Streat, Chairman of the Cotton Board. C—**10.**

A Business Approach to Consumer Standards. Thomas C. Blaisdell, Jr. *Standardization*, 1950, **21**, No. 12, pp. 305-309. The desirability of standards in consumer goods is emphasised from the point of view of manufacturer, retailer and consumer. The merits of brand names and labelling are discussed. C—**10.**

Cotton Output and Employment: Increased Rates of Production in March. *Board of Trade J.*, 1951, **160**, May 19th, pp. 1054-1055. Figures are given of the yarn and cloth production for 1945-50 and for the first three months of 1951, and for employment and machine activity for the same periods. C—**10.**

Cotton Output and Employment: Increased Rates of Production in February. *Board of Trade J.*, 1951, **160**, April 21st, pp. 837-838. This article gives figures of yarn and cloth production, and employment and machine activity, for 1945-1950, and for January and February, 1951. C—**10.**

Cotton Output and Employment: Fall in Daily Production in January. *Board of Trade J.*, 1951, **160**, March 24th, pp. 648-649. Figures are given for yarn and cloth production (weekly average), employment (number at work at the end of the period), and machine activity (weekly average) for the whole year for 1945-1950, for the quarterly periods from July 1949 to December 1950, and for each month from August 1950 to the end of January 1951. C—**10.**

Improving Weaving Mill Productivity by Rationalized Production Methods. Fritz Pflugfelder. *Melliand Textilber.*, 1950, **31**, No. 7, pp. 471-472; No. 8, pp. 542-543; No. 9, pp. 609-612. In German. The author discusses ways of planning the whole course of production, working out approximate values for the best distribution of looms for each weaver, and estimating equitable rates of pay. C—**10.**

International Cotton Statistics. N. S. Pearse. *Internat. Cotton Bull.*, 1951, **19**, January-February, pp. 73-80. These statistics are published for the second time since January 1939 and include statistics on the world total of cotton spindles, cotton mill consumption, working hours, and rayon staple consumed. C—**10.**

The Italian Cotton Industry and Trade with Egypt. Giorgio Casoni. *Egypt. Cotton Gaz.*, 1951, **12**, January, 65-69. Statistics of the Italian Cotton industry are given, with special reference to imports of Egyptian cotton, and trade relations between the two countries. C—**10**.

Japan's Future Place in World Trade. His Majesty's Minister (Commercial) in Tokyo. *Board of Trade J.*, 1951, **160**, April 21st, pp. 851-2. This article reviews the extent to which Japan, with United States economic aid, has become self-supporting. Figures are given for Japan's visible and invisible foreign trade, industrial activity, and volume of production, in 1949 and 1950. C—**10**.

Productivity: Measurement. Operational Research Club. *Engineering*, 1951, **171**, 11 May, pp. 568-570. A summarized account is given of three papers delivered to the Operational Research Club in the rooms of the Royal Society on 21st March, 1951. The papers were: "The Measurement of Productivity", by T. E. Easterfield, "Problems of Detailed Measurement of Productivity, and the Use of Such Measurements", by T. U. Matthew, and "The Object and Use of Productivity Measurement", by J. E. Widdowson. The papers were followed by discussion. C—**10**.

Methods of Labour Productivity Statistics. International Labour Office. Geneva: I.L.O., 1951, iv+136 pages. This is a report prepared for the Seventh International Conference of Labour Stastisticians (Geneva, September 1949). It is concerned with problems of measurement, and comparison and interpretation of data. C—**10**.

Output and Employment in the Cotton Industry. Board of Trade. *Board of Trade J.*, 1951, **161**, 14th July, pp. 82-83. This article gives the weekly average yarn and cloth production figures for the first five months of 1951, and the figures for the employment and machine activity in spinning, doubling and weaving for the same period. C—**10**.

Output and Employment in the Cotton Industry in June [1951]. *Board of Trade J.*, 1951, **161**, August 18th, pp. 358-9. Figures are given for yarn and cloth production from 1945 to June 1951, and for employment and machine activity for the same period. C—**10**.

Increased Production in January. *Board of Trade J.*, 1951, **160**, March 3rd, p. 477. Figures are given of rayon production (million lb. per month "delivered weight") in 1930, 1935, 1940, 1945-50 and January, 1951, and of quarterly deliveries of rayon yarn (thousand lb. actual weight) for October-December, 1949, and for 1950 (together with the quarterly averages for 1949 and 1950). C—**10**.

Research on the Unit of Work. David Cox and K. M. Dyce Sharp. *Occup. Psychol.*, 1951, **25**, April, pp. 90-108. The article surveys work done in a research project sponsored by the Human Factors Panel of the Committee on Industrial Productivity. Experiments were made on the effects on the workers, and on production, of repetitive jobs. These experiments are described, and suggestions are made for future research. There are eight references. C—**10**.

Selection, Training and Status of Supervisors: I. Selection. P. F. C. Castle and F. I. de la P. Garforth. *Occup. Psychol.*, 1951, **25**, April, pp. 109-123. The investigators (representing the National Institute of Industrial Psychology) set out (1) to survey existing practices in selecting supervisors; (2) to study the requirements of supervisors' jobs and the validity of any underlying concept of foremanship aptitude; (3) to instal certain new selection programmes in industrial situations, and (4) to determine the merits and demerits of existing methods and techniques. The range of experiments is described, with the conclusion reached. There are thirteen references. C—**10**.

The Textile and Clothing Industries' Problems in Changed Economic Conditions. Harold Wilson. *Board of Trade J.*, 1951, **160**, March 10th, pp. 533-534. This is a report of an address to the Drapers' Chamber of Trade, in London, given by Mr. Harold Wilson, then President of the Board of Trade. Mr. Wilson answered criticism of the Utility scheme, and reviewed prices and the problems of the textile and clothing industries brought about by the rearmament programme. C—**10**.

Textiles and Rearmament. *Economist*, 1951, **160**, May 19th, pp. 1186-7. The article discusses the difficulties of the textile industry in attempting to meet

defence orders of £50 million during 1951 while making a sizeable contribution to the great increases in exports of " soft goods " made necessary by the rearmament programme. C—**10**.

Wholesale Textile Houses: Seasonal Falls in January. *Board of Trade J.*, 1951, **160**, March 10th, p. 543. Figures (index numbers—1947 = 100) are given for (1) the monthly sales and stocks before the war (based on 1935-1938) and for the years 1946-50 and January, 1951, and (2) for the percentages of corresponding values (sales and stocks) for 1950 represented by the detailed figures for January, 1951. A short text comments on the tables. C—**10**.

Wholesale Textile Houses: Seasonal Fall in June Sales. *Board of Trade J.*, 1951, **161**, August 18th, p. 356. Tables are given showing (1) index numbers of sales and stocks (against average values of 100 for 1947) for 1948, 1949, 1950, and the first six months of 1951; and (2) for individual groups of textiles, percentages of the corresponding 1950 values represented by the figures for the first six months of 1951. The figures are analysed and discussed in a short text. C—**10**.

Fiber to Fabric. M. D. Potter. New York: Gregg, 1945, v+314 pages. The subtitle of this book is " A Textbook on Textiles for the Consumer ". It deals generally and on an elementary level with the different fibres, their properties, identification, and spinning, weaving, knitting, dyeing, and finishing processing. C—**10**.

Some Accounting Terms and Concepts. Institute of Chartered Accountants, and National Institute of Economic and Social Research. Cambridge: Cambridge University Press, 1951, 46 pages. This is a report of a joint exploratory Committee appointed by the two bodies to examine the major accounting concepts and the more important terms used by both accountants and economists. C—**10**.

The Statesman's Year Book 1951. S. H. Steinberg (Editor). London: Macmillan, 1951, xxiv+1624 pages. This is the 88th edition of a statistical and historical annual of the states of the world. It includes comparative statistical tables on primary products such as cotton; details of international organizations such as the United Nations, O.E.E.C., the Council of Europe, and the North Atlantic Treaty; and comprehensive data on the history, government, and commerce of all the countries of the world. C—**10**.

Textile Organisation and Production. A. E. Clifford. Belfast: Carter, 1951, 93 pages. The chapters of this book were first published monthly in *Fibres, Fabrics and Cordage*. They deal with types of organisation, principles of management, dues and duties of supervisory staff, budgets, planning of production, control of production, evaluation of work, work incentives, control of quality, materials control, costs of manufacture, personnel management, layout of plant, and maintenance of plant. C—**10**.

Annual Rayon Review. Stanley B. Hunt, Editor. *Rayon Org.*, 1951, **22**, No. 2, 32 pp. This review contains tables of statistical data for the United States, with chart representations of the quarterly and annual rayon production, and rayon yarn shipments by trades. C—**10**.

Cellulose in Rayon. *Rayon Org.*, 1951, **22**, No. 3, pp. 38-40. Figures and a graph are given for the annual cellulose consumption in the United States rayon industry from 1930-50, and data are included, on cellulose use by certain processes, the United States wood pulp supply, and cotton linters and linters pulp. C—**10**.

Cotton: Quarterly Statistical Bulletin. International Cotton Advisory Committee. *Quart. Stat. Bull.*, 1951, **3**, No. 3, 33 pp. (in English, French and Spanish). Figures are given of the world totals of cotton supply, distribution, production, consumption, stocks, exports, imports and prices; cotton supply and distribution in the United States and elsewhere; monthly consumption, exports and imports by countries; United States and United Kingdom cotton prices compared with rayon staple fibre; and the production of rayon yarn and rayon staple fibre by countries. C—**10**.

1951-52 [Cotton] Production Aspects. International Cotton Advisory Committee. *Cotton* (Washington), 1951, **4**, May, pp. 1-18. This is a review of the world cotton production prospects for the current season, compiled by the government agencies of various countries in co-operation with the International Cotton Advisory Committee Secretariat of the United States. C—**10**.

The Economics of the Textile Industry. D. Harry Angney. *Amer. Dyest. Rep.*, 1951, 40, No. 11, pp. P343-P345. The textile industry in the U.S.A. is discussed by an economist in a general way. **C—10.**

New Japan. Osaka: Mainichi Press, 1951, 516 pages. This is the fourth volume of a lavishly produced magazine illustrating the recovery of Japan. Many aspects of Japanese life are included—flower arrangement, painting, politics, cinema, theatre, sports—but the main emphasis is on industry. There are introductions to the different prefectures and their products, and many articles and advertisements. The articles include items on silk (p. 102), textiles (p. 132), knitted goods (p. 142), synthetic fibres (p. 146), and textile machines (p. 175). **C—10.**

Production and Labour. Anon. *Cotton Bd. Tr. Letter*, 1951, February, 6 pp. In this review of the progress of the cotton industry in 1950, production and labour in 1950 are compared with 1949, and the distribution of cotton goods is analysed. There are notes on the average count of cotton yarn produced, and the output per head in spinning, doubling, and weaving. **C—10.**

Japanese Cotton Textile Industry: Quarterly Review. All Japan Cotton Spinners' Association, January, 1951, 16 pp. Information is given about increases in the spindleage, production and exports of the Japanese cotton industry. Tables of statistical data deal with the equipment of the cotton industry, imports and consumption of raw cotton, exports of cotton yarns and cloths by description and by destination, numbers of workers in spinning and weaving, and the man-hours worked. **C—10.**

Japan: Exports of Cotton. ("Reasons for Sharply Increased Textile Exports and their Prospective Features.") Kippei Hara. *Monthly Report of Japanese Cotton Spinning Industry*, March, 1951, pp. 9-15. In this reply to Sir E. Raymond Streat, the Chairman of the British Cotton Board, the writer explains the situation in the Japanese cotton industry with regard to increases in production and foreign trade, which were far above the level estimated at the last Osaka tripartite cotton conference. Figures are given of the Japanese cotton cloth exports to the principal markets by destination, for 1949 and Jan.-Oct., 1950, the rate of operation of the Japanese spinning industry, and the production and export indices for 1949 and 1950. **C—10.**

Japanese Delegation: Statement to the Tenth Plenary Meeting of the International Cotton Advisory Committee. *Monthly Report of Japanese Cotton Spinning Industry*, March, 1951, pp. 16-24. In this statement information is given about the spinning and weaving equipment of the Japanese cotton industry, the increase in production of cotton yarn and cloth, foreign export of cotton manufactures, labour conditions, and the raw cotton supply for the spinning industry in Japan. **C—10.**

Sulphur. Anon. *Chem. Engng News*, 1951, 29, No. 22, pp. 2126-2131. This report reviews the production of sulphur in the U.S.A., its uses, alternative sources of supply, exports, the outlook abroad on the problem of its shortage, and government action. The opinion is expressed that there is no quick solution to the problem of sulphur shortage. **C—10.**

Textile Fibre Consumption. *Rayon Org.*, 1951, 22, No. 3, pp. 41-48. Comments are made on the figures (which are given) for the United States' annual mill consumption of cotton, wool, silk, rayon and other man-made fibres from 1920-1950, and the monthly fibre consumption, textile and general price trends, and rayon stocks for 1939-1950. **C—10.**

Three Economic Illusions. Colin Clark. *Manchester Guardian*, 1951, No. 32,733 (September 18th), pp. 6, 8. This article has the sub-title: "Is Britain Heading for a Big Inflation?" The author forecasts a financial crisis resulting from the continued cherishing, by the British people, of three illusions: cheap food, limitless taxable capacity, and rapidly increasing productivity. He argues that the terms of trade will continue in favour of agriculture, that the safe limit of taxation is 25 per cent. of national income, and that productivity is only about 5 per cent. higher than in 1938. The economic position of Britain *vis-à-vis* the U.S.A. now, is compared with the position of France *vis-à-vis* Britain after the First World War. **C—10.**

Meat and Wool Improvement Balance: Problems. J. E. Nordby. *Nat. Wool Grower*, 1951, 41, 8, pp. 17, 20, 23 and 24. Although improvement is made

difficult by fluctuating demands and prices of meat and wool, the author believes that sheep flocks are capable of great improvement and refers to research in the U.S.A. and elsewhere in this connection. W—**10.**

Linen Industry of Northern Ireland. F. E. Dohrs. *Text. Quarterly*, 1951, 1, No. 3, 222-243. Locational factors are examined as they affected the handicraft industry up to 1826; new factors are discussed in relation to the industrial revolution, and changes are reviewed from 1912, when large scale production had been reached, up to the present. L—**10.**

Linen: New Success in U.S.A. *Dyer*, 1951, **106**, No. 5, 319. In its Ulster textile survey, this periodical quotes from a recent issue of the *Midland Bank Review*. The exports of linens in 1950 were greater than in 1949. The cloth yardage which went to the U.S.A. was nearly double that of 1949, owing in part to the publicity campaign of the Irish Linen Guild. The distribution to other countries has changed—more to Canada and European countries, less to the Commonwealth, and still less to South America. The exports to China for embroidery have ceased, at any rate temporarily. L—**10.**

Dutch Flax Acreage. *Linen Trade Circ.*, 1951, **37**, September 29, 13. An acreage of 75,000 acres, the largest this century, was grown in Holland this year. The crop is in general of medium quality. L—**10.**

Irish Flax Prices. *Linen Trade Circ.*, 1951, **37**, September 1, 2. The net prices to be paid to Northern Ireland growers for dam-retted 1951 flax have been fixed; for hand-scutched fibre the prices range from 58/1½d. for Grade I to 50/7½d. for Grade VI; and for turbine-scutched, from 59/7½d. for Grade I to 52/1½d. for Grade VI. L—**10.**

Northern Ireland Flax: Economic Basis. F. J. Leitch. *Linen Trade Circ.*, 1951, **37**, September 15, 11. The author considers that flax growing in Northern Ireland is not an economic success, on account of the high rainfall. It is for this reason that the flax straw is put into dams immediately it is pulled, and so the seed is lost. L—**10.**

Flax Fibre and Linseed. F. J. Leitch. *Linen Trade Circ.*, 1951, **37**, September 22, 1. Advocates the growing of a large flax acreage in England to obtain flax fibre and linseed for stockpiling for defence purposes. L—**10.**

11—INDUSTRIAL WELFARE, INDUSTRIAL PSYCHOLOGY AND EDUCATION

The Appearance of Changes in Chronaxia before Any Clinical Manifestation in a Case of Industrial Poisoning by Carbon Bisulphide. Introduction to a Study of Pre-Toxicoses. G. Bourguignon. *Bull. Acad. Nat. Méd.*, 1950, **134**, Nos. 13 and 14, pp. 287-9 (through *Bull. Hyg.*, 1950, **25**, No. 11, p. 1151). The claim is advanced that, before clinical signs and symptoms of toxæmia become manifest, there exists a pre-toxæmic state which can be detected, in particular by changes in chronaxia. Evidence supporting this is given in the case of a man who was carefully examined before he went to work in a rayon factory, where he was exposed to carbon bisulphide, and at intervals during his employment there. No clinical signs of carbon bisulphide poisoning appeared until ten months had elapsed, but changes in chronaxial reactions could be detected after only two months. C—**11.**

Cardiovascular Disease in Cotton Workers. Part I. Richard Schilling and Nancy Goodman. *Brit. J. Industr. Med.*, 1951, **8**, April, pp. 77-90. A brief description is given of the three stages in the development of byssinosis, the respiratory disease suffered by cardroom workers. The authors then analyse the Registrar General's figures of the death rates from cardio-vascular diseases among cotton workers, chiefly for the years 1930-32. It is shown that in the three occupational groups studied—strippers and grinders, weavers, and spinners —there is an association between mortality and the extent of dust exposure. The significantly high death rate of the strippers and grinders, who have the occupation with the highest dust exposure, from cerebral vascular lesions, supports the hypothesis that hyperpiesis may cause the mortality excess. C—**11.**

Electric Shock. E. H. W. Banner. *Elect. Rev.*, 1951, **148**, June 29th, pp. 1347-1349. The author discusses factors which contribute to the danger of

electric shocks. These include circuit voltage, resistance between contacts, the resulting current through the body, energy and duration of the discharge, part of the body involved, d.c. or a.c., frequency, and burning. C—11.

The Health Engineer and Industrial Medicine. M. E. M. Herford. *Chem. & Ind.*, 1951, No. 25, pp. 470-472. The history of the development of industrial hygiene in the United States is outlined and the work of the industrial health teams is described. The foundations for a similar scheme have been made in this country by the establishment (through the aid of the Nuffield Foundation) of the Slough Industrial Health Service. C—11.

Dust: Persistence in Occupied Rooms. E. J. Lowbury. *J. Hyg., Camb.*, 1950, 48, p. 1 (through *Brit. J. Industr. Med.*, 1951, 8, April, p. 115). As a preliminary study of the survival of bacteria in floor dust, experiments were designed to investigate the persistance of dust in rooms. Small amounts of insoluble fluorescein—as a powder or precipitated in blanket wool—were scattered in rooms which were thoroughly dusted daily. Measurable quantities were detectable in the floor sweeping for three weeks. C—11.

Health Hazards from Fire Extinguishers. H. Gärtner. *Arch. f. Hyg. u. Bakt.*, 1950, 132, Nos. 3 and 4, pp. 241-57 (through *Bull. Hyg.*, 1950, 25, No. 11, p 1153). Among a variety of portable fire extinguishers, carbon tetrachloride and methyl bromide carry special health risks. Carbon tetrachloride can cause injury to the kidneys, lungs and liver, especially if the fire is caused by burning wood, molten iron or spirit, since in these cases phosgene is formed. Methyl bromide is often used in a mixture with ethylene bromide, which is a strong irritant of mucous membrane, and methyl bromide itself has a strong toxic effect on the nervous system. The author describes the symptoms of poisoning by methyl bromide, describes investigations into the lethal concentrations of both chemicals, and rccommends certain preventive measures. There are forty-six references. C—11.

Manifestations of Vascular Changes in the Central Nervous System Due to Poisoning by Carbon Bisulphide. E. C. Vigliani and C. L. Cazzullo. *Med. d. Lavoro.*, 1950, February, 41, No. 2, pp. 49-63. English summary. (Through *Bull. Hyg.*, 1950, 25, No. 11, pp. 1151.) This paper deals with sixteen cases of poisoning by exposure to carbon bisulphide, seen by the authors among employees of two rayon factories where the viscose process is in use. There are twelve references. C—11.

Safe Working on Horizontal Two-Roll Mills. John Stopforth. *India-Rubber J.*, 1951, 121, No. 6, pp. 7-11; No. 7, pp. 4-8. In order to set the safety bars used on horizontal two-roll mills various measurements of the machine operative are required. This article describes how these measurements are made and gives tables of typical data. Three measuring devices described determine dimensions for (*a*) the shoulder control point, (*b*) the elbow control point, and (*c*) the knuckle control point, respectively. C—11.

A Safety Device For Use With Laboratory-Size Rubber Mills. R. W. Lunn. *India-Rubber J.*, 1951, 120, No. 25, pp. 7-9. A theoretical examination is made of a safety device for laboratory-size rubber mills. This consists of a swinging gate (made of transparent plastic) suspended vertically over the top of the front roller of the mill with a gap of about one inch between the bottom of the gate and the top of the roller. A hand passing under the gate rotates the gate and in so doing operates a switch which stops the machinery. The author shows how the device could be used to provide complete protection. C—11.

The Survival of Bacteria in Dust. I. The Distribution of Bacteria in Floor Dust. II. The Effect of Atmospheric Humidity on the Survival of Bacteria in Dust. III. The Effect of Light on the Survival of Bacteria in Dust. IV. Atmospheric Humidity and the Bactericidal Action of Ultra-Violet Irradiation. O. M. Lidwell and E. J. Lowbury. *J. Hyg., Camb.*, 1950, 48, No. 6 (through *Brit. J. Industr. Med.*, 1951, 8, April, pp. 114-115). This is a description of four groups of experiments on the survival of bacteria in dust in various conditions. C—11.

The Toxicity of Tricresyl Phosphates. N. Nelson. *Med. Bull* New Jersey, 1950, 10, April, pp. 188-200 (through *Bull. Hyg.*, 1950, 25, No. 11, p. 1151). Two commercial preparations, equally satisfactory in use, are available as tricresyl phosphates. Their relative toxicities were tested in animal experiments. It was

found that neither is seriously toxic so far as these animal experiments can give evidence, but in practice the reactions of man to these tricresyl phosphates must be closely watched by factory doctors, for only experience can finally decide the the issue. C—11.

The British Universities—I and II. *Economist*, 1951, **160**, March 24th, pp. 668-670; March 31st, pp. 726-7. **I.** This is an account of the changing character of the Universities, especially since the admittance of very large numbers of ex-service students after the last war, and since grants towards university education were greatly increased. Figures showing the numbers of students up at the various universities before the war are compared with those for the autumn term of 1950, and the percentage increase is given; there is also a table of the grants towards university education before the war, in 1948-9 and in 1950-51. **II.** Part II describes the financial situation of the universities, the optimum number of university students (the present level is about 84,000), the balance between the arts and the sciences, and the status of the provincial universities. C—11.

Higher Technological Education. House of Commons. *Hansard*, 1951, **485**, No. 77, 22nd March, pp. 2643-2660. A debate on this subject is reported. C—11.

Philadelphia Textile Institute. Philadelphia Textile Institute. *Textile Age*, 1951, **15**, No. 5, pp. 46-51. This is a review of the Philadelphia Textile Institute, its history and its present facilities. Details of equipment in all departments are given. There is a 14-question quiz (answers given separately), compiled by the Institute's staff, in five sections—dyeing, woollen and worsted, textile chemistry, weave formation and fabric analysis, and textile education. C—11.

Ahmedabad Textile Industry's Research Association: Foundation-stone Laying Ceremony. *Indian Text. J.*, 1950, **61**, December, pp. 156-159. After a description of the setting up of the Ahmedabad Textile Industry's Research Association in 1948, its early work, its organization, and its research programme, the speech by the Chairman of the Council of Administration of A.T.I.R.A. at the foundation-stone laying ceremony on November 1st, 1950, is given in full. There are reports on the speeches by the Deputy Prime Minister of India and the Indian Minister for Industry and Supply. C—11.

The Empire Cotton Growing Corporation 1921 to 1950. Empire Cotton Growing Corporation. *Emp. Cotton Growing Rev.*, 1951, **28**, No. 1, pp. 1-43. This is an account of the origin and development of the Empire Cotton Growing Corporation, and its scientific policy, with reports on the Corporation's Research Stations and on the work of the Corporation in the thirteen cotton-producing countries of the Empire. Short accounts are given of the Corporation's solution to the problem of motor-transport in undeveloped areas, and of its contacts with foreign countries. Finally there is a graph of the total Empire cotton crops from 1918 to 1949, and a comparative table of the cotton crops of the various territories covered by the Empire Cotton Growing Corporation. C—11.

The Opening of the Cotton Research Station, Namulonge, Uganda. Empire Cotton Growing Corporation. *Emp. Cotton Growing Rev.*, 1951, **28**, No. 1, pp. 44-48. This is a report on the opening of the Cotton Research Station, a hillside estate of some 2,240 acres, at Namulonge, in Uganda, on November 9th, 1950. The station's research programme is not dealt with here, but details of the buildings and facilities are given. C—11.

Pure Science, Applied Science and the Application of Science. H. R. Kruyt. *Chem. & Ind.*, 1951, No. 14, 7 April, pp. 260-264. In the Jubilee Memorial lecture delivered before the Society of Chemical Industry in January, 1951, a philosophical analysis of the subject is attempted, and leads on to a discussion of the relations between science in the University and its application in industry. C—11.

South African Council for Scientific and Industrial Research. W. S. Rapson. *Chem. & Ind.*, 1951, No. 19, pp. 366-368. After briefly describing the organization of the South African National Chemical Research Laboratory, the author outlines some recent research activities carried out there. This laboratory was formed four years ago and now has a scientific staff of about sixty graduates. Thirty-two references are given. C—11.

Safe Working on Horizontal Two-Roll Mills: Measurement of Braking Distance. Cyril Cuthbert. *India-Rubber J.*, 1951, **121**, No. 8, pp. 11, 13. A simple device is described which measures the surface travel of a heavy roller between the time of application of the brake and the roller coming to rest. C—**11.**

German Finishing Industry: Technical Committee. W. Tamschick. *Deutscher Färberkalender*, 1951, **55**, pp. 161-173. In German. C—**11.**

Industrial Training of Chemists and Engineers in Industry. Charles H. Kline. *Chem. Engng News*, 1951, **29**, No. 15, p. 1394. Charles H. Kline introduces a symposium, consisting of a series of four articles which attack the question, "What is the best means of training chemists and engineers for modern industry?", from different points of view. (See following abstracts.) C—**11.**

Training Graduates for Industry. ("Adapting the College Product to Industry.") Paul D. V. Manning. *Chem. Engng News*, 1951, **29**, No. 15, pp. 1394-1396. An American industrialist, in charge of research at a large chemical firm, discusses the orientation of the new University graduate to the industrial environment, and advocates, among other things, closer co-operation between industry and educational institutions, especially in the life of the student during his later training. C—**11.**

Training Technical Graduates in Industry. ("Developing the Technical Graduate on the Job.") Lauren B. Hitchcock. *Chem. Engng News*, 1951, **29**, No. 16, pp. 1513-1516. The aims and methods of company training programmes for the technical graduate are outlined by an industrialist. C—**11.**

Trainee's Progress: Measurement. Charles S. Tracy. *Chem. Engng News*, 1951, **29**, No. 17, pp. 1637-1639. A personnel manager in a large American industrial concern outlines the training course given to new technical graduates in his company. Before being assigned to a permanent job the trainee works in several departments and is rated in his performance of a large variety of duties. C—**11.**

Practical Training in Universities. W. L. Lewis. *Chem. Engng News*, 1951, **29**, No. 15, pp. 1397-1398. The two most widely used methods of arranging practical industrial training of university students in science and engineering in the U.S.A.—namely, the Cincinnatti plan and the practice school technique adopted by the Massachusetts Institute of Technology—are evaluated and compared by a professor emeritus of chemical engineering at the Massachusetts Institute of Technology. C—**11.**

New Bedford Textile Institute. Anon. *Text. Age*, 1951, **15**, No. 6, pp. 38-43. This is a description of the New Bedford Textile Institute in New England, its achievements, its facilities, its educational programme, and the equipment of its various laboratories. C—**11.**

Rhode Island School of Design. Anon. *Text. Age*, 1951, **15**, No. 4, pp. 28-33. This is a description of the Rhode Island School of Design, Providence, Rhode Island, which was founded in 1878. C—**11.**

Typography: First Principles. Stanley Morison. Cambridge: University Press, 1951, 18 pages. This pamphlet is No. 1 of the Cambridge Authors' and Printers' Guides. C—**11.**

Preparation of Manuscripts and Correction of Proofs. Cambridge University Press. Cambridge: University Press, 1951, 19 pages. This pamphlet is No. 2 of the Cambridge Authors' and Printers' Guides. C—**11.**

Research and Development Work: Co-ordination. J. A. Leermakers. *Chem. Engng News*, 1951, **29**, No. 32, pp. 3152-3154. The productiveness of an industrial research laboratory is discussed in relation to its organization and direction. C—**11.**

Textile and Chemical Industries: Co-operation. ("Seek a Common Language, Textile, Chemical Industries Told.") Anon. *Chem. Engng News*, 1951, **29**, No. 5, pp. 374-375. A report is given of papers given at the meeting of the Commercial Chemical Development Association in January 1951 in Detroit, U.S.A. Improved liaison is urged between the textile and chemical industries. A central research organization supported by the textile industry is advocated—the organization to undertake basic research, to abstract literature pertaining to the industry, and to make information available to manufacturers. The general work and the research projects undertaken by the Textile Research Institute are

described by J. D. Dillon, who also emphasised the limitations of the facilities available at the Institute. C—11.

Industrial Research Laboratories of the United States. National Research Council. Washington: National Research Council, *Bulletin No. 120*, 1950, ix + 444 pages. The ninth edition of this directory lists 2,845 concerns and gives information about the location of laboratories, the research staff, the research activities, consulting services, and library holdings (volumes). There are two appendixes, one relating to Federal Government laboratories, the other to universities and colleges offering research services to industry; and two indexes, the first relating to the geographical distribution of laboratories, the second a subject index to research activities. C—11.

Textile Information: Production and Utilisation. J. C. Withers. *J. Textile Institute*, 1951, **42**, No. 5, pp. P181-P191. The 1951 Mather Lecture of the Textile Institute is given in full. C—11.

Seventy-fifth Anniversary of the American Chemical Society. Anon. *Chem. Engng News*, 1951, **29**, No. 33, pp. 3223-3442. *Chemical and Engineering News* has published a Jubilee Edition to celebrate the seventy-fifth anniversary of the founding of the American Chemical Society. The edition includes articles of a general and historical nature on several aspects of science, and there are many pages of early photographs of interest to chemists. C—11.

Rayon Labelling: Regulations. *Knitted Outerwear Times*, 1951, **19**, (38), 22-23. U.S. Federal Trade Commission have proposed recommendations which would differentiate between rayon and acetate products. Definitions, labelling rules and trade names are given. H—11.

12—CONFERENCES AND EXHIBITIONS

British Plastics Exhibition and Convention. *British Plastics* and the British Plastics Federation. *Brit. Plastics*, 1951, **24**, June, pp. 171-185. This is a detailed guide to the stands at the Exhibition held in June, 1951, in the National Hall, Olympia. C—12.

International Silk Congress at Lyons, June 1948. International Silk Association. *l'Industrie text.*, 1948, **65**, pp. 23-59. In French. Summaries are given of papers covering all aspects of silk production and processing. C—12.

Knitting Show [Atlantic City]. *Text. World*, 1951, **101**, No. 6, pp. 120-134. This is a report on the 1951 Knitting Arts Exposition in Atlantic City. Illustrated descriptions of the exhibits cover knitting machines; finishing equipment; mending, sewing and trimming equipment; laying-up and packaging machinery; auxiliary devices; supplies and equipment; and yarns, dyes and chemicals. C—12.

Seventh International Silk-Cultivation Conference at Alès (France), June, 1948. International Silk Association. *l'Industrie text.*, 1948, **65**, pp. 19-20. In French. A report of the conference is given. The international aspect of declining silk production was discussed. C—12.

British Plastics: Success of First Exhibition and Convention. *British Plastics* and the British Plastics Federation. *Brit. Plastics*, 1951, **24**, July, pp. 223-231. This is an account of the Exhibition and Convention held in the National Hall, Olympia, in June, 1951. It includes the opening speech, the inaugural address to the Convention, and details of the thirty-seven papers presented. C—12.

Fourier Methods in Crystal-structure Analysis: Summarized Proceedings of a Conference on the Development and Application—London, November, 1950. *Brit. J. Appl. Phys.*, 1951, **2**, No. 3, pp. 61-70. The conference reported was the annual autumn conference of the X-ray analysis group of the Institute of Physics. In addition to an evening lecture delivered by Professor D. R. Hartree of the University of Cambridge on "Automatic Calculating Machines", there were two sessions—one on basic theory, and one on the handling of the arithmetical problems—at each of which four papers were presented. The lecture, the papers and the discussions are summarized in this report, and there are twenty-three references. C—12.

The Thirty-fifth Physical Society Exhibition. Anon. *Instrum. Pract.*, 1951, **5**, No. 5, pp. 276-283. Photographs and details of a number of the instruments seen at the preview of the Physical Society Exhibition are shown. A comprehensive report of the exhibition will appear in the May issue. C—**12.**

American Chemical Society: Spring Meeting 1951. American Chemical Society. *Chem. Engng News*, 1951, **29**, No. 16, pp. 1484-1512. The spring meeting of the American Chemical Society which was held in Boston in April 1951 is reported. In the Division of Cellulose Chemistry (p. 1497), a new method of fractionating cellulose acetate, which yields fractions narrow with respect to distribution both of acetyl value and intrinsic viscosity, was announced by Arnold J. Rosenthal. L. A. Cox and O. A. Battista described a one-step method for eliminating the effect of different degrees of substitution on viscosity measurements of cellulose acetate. In the Division of High Polymer Chemistry (p. 1502) a brief general report is given of some twenty-seven papers presented. The theories and work of H. W. Melville in the field of degradation mechanisms were referred to frequently. In the Division of Physical and Inorganic Chemistry (p. 1510), methods and apparatus used in infra-red spectroscopy are described. A method, outlined by C. W. Young, would enable quantitative infra-red analysis to be made without knowledge of the sample molecule. Infra-red techniques are used more and more in large molecule analyses. C—**12.**

Proceedings of the Alaskan Science Conference. National Research Council. Washington: National Research Council, *Bulletin No. 122*, 1951, x+216 pages. The object of the conference held in Washington, November 9 to 11, 1950, was to stimulate wider interest in research relating to the Alaskan area. This report gives an account of the opening session and abstracts of the technical papers read at the section meetings and the symposia. The physiology section included papers on climatic adaptation, and metabolic studies. C—**12.**

H.A.T.R.A.: Exhibits at Hinckley. *Hosiery Times*, 1951, **24**, (268), 80. A note on the working exhibits on the stand of the Hosiery Research Association at the Festival of Britain Exhibition held at Hinckley during August, 1951. H—**12.**

Old Linens: Irish Linen Guild's Display. *Linen Trade Circ.*, 1951, **37**, September 29, 5, 6. Describes exhibits in a recent display of very old specimens of linen which are still in occasional use. L—**12.**

Linen Industry Research Association: "Open Day". *Linen Trade Circ.*, 1951, **37**, October 13, 1, 13, 15. Outlines the main features of interest at the recent "Open Day" held by the L.I.R.A. Demonstrations of a variety of experiments and tests were given by the staff, and discussions were welcomed. A wide range of machinery and laboratory equipment, much of which had been developed by the L.I.R.A., was on view. L—**12.**

12

CORRECTIONS

J. Textile Institute, 1951, **42**, A96, 4th abstract.

Wool Dyeing: Kinetics II. The authors should read "P. Alexander and D. A. Charman".

J. Textile Institute, 1951, **42**, No. 11, p. A556, 4th abstract, 2nd line, "1951" should read "1950", and p. A557, 3rd abstract, 3rd line, "1951" should read "1950".